Expenditure patterns of older Americans, 1984–97

Older consumers, who are expected to account for an increasing share of consumer expenditures, have spending trends similar to those of younger consumers; however the underlying tastes and preferences of subgroups of older consumers did not change significantly over the period studied

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One of the major demographic changes affecting the United States today is the increasing average age of the population. This trend is expected to continue for the next several years, especially as the large segment of the population known as the baby-boomers continues to mature. The oldest members of this group (born in 1945) will reach the nominal retirement age (65 years) in 2010. As this happens, consumer spending patterns are likely to change in a number of ways.

But what kinds of changes are in the offing, and how large might they be? Have there already been changes that might help us prepare for the future? Although previous studies offer some insight by recognizing and examining the importance of expenditures by older consumers, many of those studies concentrate on spending patterns at just one or two points in time. This article includes elements from earlier studies, but takes the analysis further: first, expenditure trends are analyzed for different age groups within the older population; second, experiments are designed to test whether tastes and preferences differ over time for older consumers. Data for the analysis are provided by Consumer Expenditure Surveys from 1984 to 1997.

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Methods and procedures

Previous studies. Beth Harrison[1] compared consumer units (hereafter, families)[2] in which the reference person was between the ages of 65 and 74 with those in which the reference person was 75 or older.[3] Despite the brevity of her analysis, Harrison described an important finding: persons 65 years and older are not homogeneous. She found that the older group had fewer earners than the younger group (0.2, compared with 0.6), was less likely to own its home (2 out of 3 families 75 and older, compared with 3 out of 4 aged 65 to 74), and had a slightly smaller family size (1.5 members, compared with 1.9 members.) She also found that those 75 or older spent less for most goods and services than those 65 to 74.

A later study by Thomas Moehrle examined expenditure patterns by families with reference persons aged 62 to 74.[4] Moehrle classified families into three income categories (less than $15,000, $15,000 to $29,999, and $30,000 or more), which he then further divided into two groups each: working and nonworking. Working families were those whose reference person received earnings from full- or part-time employment during the 12 months prior to the interview. All other families he classified as nonworking, even if members other than the reference person had worked. Those whose reference person was involuntarily unemployed or working without pay were excluded from the sample. Moehrle found that, regardless of income class, workers had higher expenditures for most goods and services than nonworkers.

Pamela B. Hitschler presented comparisons

both within age groups across time and across age groups at a point in time.[5] One expenditure component that yielded interesting outcomes in the comparisons was health care: chart 1 of her article showed that, regardless of age (65 to 74 years or 75 and older), the proportion of the health care budget allocated to insurance was substantially larger in 1990 than in 1980. Correspondingly, the proportion allocated to medical services declined noticeably for each group over time. The same chart revealed that, regardless of year, the younger group (aged 65 to 74) allocated a larger share of total health care dollars to health insurance, although the gap was less in 1990 (48 percent, compared with 45 percent for the 75-or-older group) than in 1980 (37 percent, compared with 26 percent).

More recently, Mohamed Abdel-Ghany and Deanna L. Sharpe used Tobit analysis to examine levels of expenditures for those same two age groups.[6] Tobit analysis allowed them to make estimates about how tastes and preferences differed between the groups when characteristics such as income, family size, and region of residence were held constant. Abdel-Ghany and Sharpe found differences between the two groups in every expenditure category they examined.

Similarly, Rose M. Rubin and Michael L. Nieswiadomy[7] combined results of several studies, some also using Tobit, into a book describing characteristics and expenditure patterns of older consumers. One of their more interesting extensions to the earlier analyses was that they attempted to measure the effects of change on the lives of older consumers, first by comparing regression results for pre- and postretirement families[8] and then by examining changes in tastes and preferences over time.[9] Their final chapter, entitled "Trends and the Future," briefly discusses how the increasing number of older people may affect households, businesses, and government policies in the future.

The current article incorporates themes from all of these studies and yet is different from them in many ways. Starting with the similarities, all use data from the Interview component of the Consumer Expenditure Surveys. Further, with the exception of Moehrle's investigation, all use data for families whose reference person is either between the ages of 65 and 74 or 75 and older. Like them, the current study uses similar methods (for example, Tobit regressions) to examine expenditure patterns, and many of the same expenditures (such as food, housing, and health care) are considered.

However, there are differences. For instance, the Abdel-Ghany and Sharpe models are expanded to include variables such as whether the reference person is working. (Moehrle used this variable as well.) Also, the Tobit regressions are used here not to compare 65- through 74-year-olds with those aged 75 and older, but to compare whether tastes and preferences for each group are changing across time. Although Rubin and Nieswiadomy have also done this to some extent, the models employed in this article include more independent variables. In addition, models are designed to show specifically which expenditure–characteristic relationships have changed significantly over time, as opposed to the Chow test used by Rubin and Nieswiadomy, which can only tell whether, in general, there has been some kind of change over time. And most important, while, of necessity, the regressions use only the Interview survey, data from the *integrated* survey results (described below) are used as well. Because these data are available on a consistent basis from 1984 onward, the analysis shows trends, so that the reader can observe how changes in patterns have occurred over time. The final set of data is from 1997, because that is the most recent year for which data were available at the time the study was carried out.

The data. There are two components to the Consumer Expenditure Surveys: the Diary and the Interview. Each is designed to collect different types of expenditures with maximum efficiency.

Families participating in the Diary survey receive a booklet in which to record all their expenditures during the 1st week of a 2-week survey period. The booklet is retrieved at the end of the 1st week and replaced with a fresh booklet. When the second booklet is retrieved at the end of the 2nd week, participation in the survey is completed. The Diary survey is designed to collect expenditures for frequently purchased items (for example, groceries) and small-cost items (for instance, laundry detergent).

The Interview survey is a panel survey designed to collect information on family expenditures over five consecutive quarters. During each interview, the respondent is asked to recall expenditures for the last 3 months for most items in the survey. The first interview is used for bounding purposes—that is, to make sure that the expenditures reported took place in the time frame in question. (For example, a family that just purchased a refrigerator the week before the first interview should report the purchase during the first interview. If, during the second interview, the respondent for that same family also reports the purchase of a refrigerator, the interviewer can make sure that the respondent is not referring to the same refrigerator reported in the first interview.) The Interview survey is designed primarily to collect information on recurring (for instance, rent or insurance) and "big-ticket" (for example, automobiles or major appliances) expenditures, because outlays for such items tend to be remembered for long periods. Also used to collect data on travel expenditures not collected in the Diary survey, the Interview survey covers up to 95 percent of all expenditures.[10]

The data from each survey are subsequently integrated using various statistically based techniques to find out which source provides the most reliable information for a given expenditure item. The simplest case is that in which an expenditure item is collected in one survey, but not the other. For

example, in the Diary survey, extremely detailed information on food purchased at the grocery store is collected, with the respondent asked to write down each specific item purchased and the associated expenditure (for example, $5 for chuck roast). However, in the Interview survey, only a global question concerning the average weekly expenditure for groceries during the last 3 months is asked.[11] Therefore, the Diary is the source used to obtain estimates even for aggregated food expenditures (such as for beef, or even the more aggregated category of meat, poultry, fish, and eggs). However, some items, including certain articles of apparel, are collected in both surveys. In these cases, data from each survey are compared, and the source that appears to be better based on the aforementioned statistical analysis is used.[12] The integrated data yield the best overall picture of expenditure patterns for comparing trends in spending.

Unfortunately, because the surveys are separate entities, it is not possible to "integrate" them in any way to perform regression analysis. For this reason, the Interview survey is chosen, because of its comprehensive nature. Although many detailed items for specific goods are collected in the Diary, only the Interview provides an estimate of total expenditures for all families. Hence, it is from the Interview survey results that data are extracted for regression analysis.

Analysis of spending patterns

Trends. As noted earlier, previous studies have analyzed differences in expenditure patterns across age groups, but within a certain period, or have statically compared two periods and looked at the change that has taken place between them. However, either of those types of analyses misses some of the interesting variation in expenditure patterns that occurs between periods. For example, comparing two periods that are separated by a long stretch of time might lead to the conclusion that not much had changed, because expenditures for a particular item were identical in each period, on average. Yet, between the periods, expenditures may have soared and retreated back to original levels, or they may have modulated around a baseline to which they have coincidentally returned in the second period. Although in the ending period, expenditures were similar to those of the starting period, what happens in the middle is lost without trend analysis. Because the integrated data from the Consumer Expenditure Surveys are available in a consistent format from 1984 onward, separate trends can be followed for those aged 64 to 75 and those aged 75 and older.

The first trend to note is the increasing proportion of the population that is accounted for by older families. The percentage of all families whose reference person is 65 or older rose from 19.8 percent in 1984 to 20.8 percent in 1997. Although the increase may not seem large, keep in mind that the numbers are percentages of the population as a whole. Given the growth of the U.S. population, the rise in the percentage of those older than 65 represents an increase of approximately 4.1 million families over the 1984–97 period, or an average increase of more than 313,000 families per year. This magnitude of growth is due mainly to an increase in numbers of the most senior members of the group: although 65- to 74-year-old families account for about 12 percent of the population in both 1984 and 1997, those aged 75 and older increased from less than 8 percent to more than 9 percent of the population during that time. Or, to put it another way, concomitantly with the growth of the total U.S. population during the period, the number of families whose reference person was younger than 65 increased about 16 percent from 1984 to 1997, while the number of those aged 65 and older grew nearly 23 percent. Of the latter, those aged 65 to 74 increased their numbers by 13 percent, while those aged 75 and older grew by 38 percent.

Table 1 shows that, while younger families have had relatively stable expenditure levels in real (that is, adjusted for inflation) dollars from 1984 to 1997, real expenditures (in 1997 dollars) by older consumers have risen substantially—14 percent for those aged 65 to 74 and 18 percent for those aged 75 and older. As a result, spending by older consumers has risen from 12.6 percent to 14.6 percent of all consumer spending. (See chart 1.) Put another way, those 65 and older once accounted for 1 in every 8 consumer dollars spent; now they account for more than 1 in every 7 consumer dollars spent.[13] Of course, this rise in aggregate consumer spending share may reflect the phenomenal growth rate in the stock market during the period in question, given that older consumers are more likely than younger consumers to live on proceeds from selling assets or on dividends and other income that assets produce.

But what are the ramifications for less aggregated expenditures? Surely, if older consumers have different tastes, preferences, or physical needs than younger consumers, they are expected to have differences in expenditure patterns. To test this idea, trends for several major expenditure categories, including food at home, housing (shelter and utilities),[14] apparel, transportation, and recreation (including entertainment, food away from home, and reading) are displayed in real (that is, inflation-adjusted) terms. (See chart 2.) In each of these cases, indeed, older consumers purchase different *amounts* than younger consumers, but in most cases, the *trend* of expenditures is similar for older and younger consumers. One interesting exception is recreation: although all age groups exhibited a real decrease in these expenditures during the 1990–91 recession, in 1997, recreation expenditures of younger consumers were down slightly (about 1 percent) from their 1991 value, whereas they had risen substantially for older consumers by 1997—19 percent for those aged 65 to 74 and 28 percent for those at least 75 years old.

Table 1. Selected characteristics of families, by age group, 1984–97

Item	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Percent change, 1984–97
Number of households (thousands):															
Under age 65	72,357	72,919	74,727	74,378	75,259	75,496	76,889	77,216	78,256	78,189	80,709	81,330	82,659	83,640	15.6
65 to 74	10,761	11,302	10,832	11,578	11,319	11,848	11,318	11,935	11,959	11,934	12,038	11,933	11,742	12,109	12.5
75 and older .	7,105	7,343	8,485	8,194	8,284	8,474	8,761	8,767	9,804	9,926	9,463	9,860	9,811	9,827	38.3
Nominal values															
Income before taxes:[1]															
Under age 65	$25,770	$27,493	$28,036	$30,273	$31,351	$34,447	$35,293	$37,633	$37,465	$38,699	$39,801	$40,878	$42,076	$44,135	71.3
65 to 74	15,720	18,191	17,874	18,598	20,704	22,051	21,501	22,723	23,182	24,468	24,934	25,553	25,824	27,492	74.9
75 and older .	11,712	12,306	12,461	12,912	13,707	16,285	15,435	16,247	18,051	17,192	19,616	18,006	18,379	19,425	65.9
Average annual expenditures:															
Under age 65	$23,953	$25,406	$26,113	$26,616	$28,142	$30,190	$30,955	$32,274	$32,423	$33,325	$34,186	$34,949	$36,342	$37,545	56.7
65 to 74	15,842	17,938	17,506	18,888	20,120	21,152	20,901	22,564	22,862	23,706	25,059	25,277	27,739	27,792	75.4
75 and older .	11,122	13,012	12,198	12,230	13,339	15,919	15,450	15,782	17,794	18,350	19,280	18,572	19,603	20,279	82.3
Consumer Price Index for All Urban Consumers (1982–84 = 100), annual average	103.9	107.6	109.6	113.6	118.3	124.0	130.7	136.2	140.3	144.5	148.2	152.4	156.9	160.5	54.5
Real values (1997 dollars)															
Income before taxes:[1]															
Under age 65	$39,808	$41,010	$41,056	$42,771	$42,535	$44,587	$43,340	$44,347	$42,859	$42,984	$43,104	$43,051	$43,042	$44,135	10.9
65 to 74	24,284	27,134	26,175	26,276	28,090	28,542	26,403	26,777	26,520	27,177	27,003	26,911	26,417	27,492	13.2
75 and older .	18,092	18,356	18,248	18,243	18,597	21,079	18,954	19,146	20,650	19,096	21,244	18,963	18,801	19,425	7.4
Average annual expenditures:[1]															
Under age 65	$37,001	$37,896	$38,240	$37,605	$38,181	$39,076	$38,013	$38,032	$37,091	$37,015	$37,023	$36,807	$37,176	$37,545	1.5
65 to 74	24,472	26,757	25,636	26,686	27,297	27,378	25,666	26,590	26,154	26,331	27,139	26,620	28,375	27,792	13.6
75 and older .	17,181	19,409	17,863	17,279	18,097	20,605	18,973	18,598	20,356	20,382	20,880	19,559	20,053	20,279	18.0

[1]Complete income reporters only.

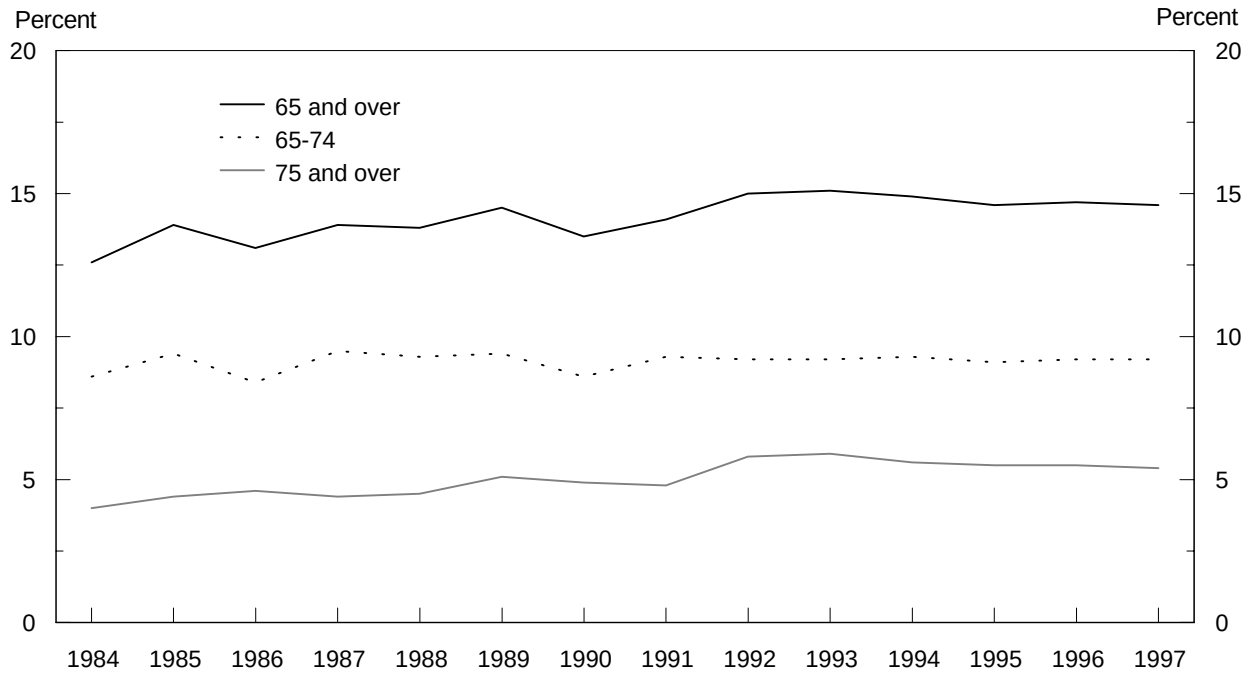
An analysis of shares is also useful in this case. Aggregate shares, or the percentage of total consumer spending on a particular category for which each age group accounts, are especially enlightening, because they provide insight into which sectors are changing with the population. Older consumers are indeed accounting for larger shares of most of the major expenditures. (Only the share for food at home remained relatively stable for all age groups.) This trend is largely attributable to changes in aggregate expenditure shares for those who are 75 and older. For example, in 1984, that group accounted for 5 percent of spending on shelter and utilities, a share that steadily increased to nearly 7 percent in 1993. Although it has since declined to about 6 percent, the overall aggregate share for shelter and utilities for those aged 65 and older rose from about 14 percent to 15 percent from 1984 to 1997.

Similarly, the older group accounted for 2.6 percent of total spending on apparel in 1984, but the share rose to 4.0 percent in 1997. The rise means that consumers who are at least 65 years old have increased their share of spending on apparel from 1 in every 10 dollars to 1 in every 8 dollars.

For those aged 75 and older, the change in transportation shares are identical to the change in apparel shares from 1984-1997. (That is, they rise from 2.6 percent to 4.0 percent over the period.) However, the aggregate expenditure share for those aged 65 to 74 has been fairly stable, ranging from a low of 7.8 percent in 1987 to a high of 9.3 percent in 1988, but usually staying between 8 percent and 9 percent. Therefore, the aggregate share for the combined older groups increased from 10.9 percent to 12.3 percent of total consumer spending on transportation.

Aggregate shares for recreation increased for all older consumers. For those aged 65 to 74, the aggregate share increased from 7.6 percent to 8.7 percent from 1984 to 1997. Again, the increase was even greater for those aged 75 and older, rising from 2.9 percent to 4.5 percent. Altogether, this group's share

Chart 1. Share of total expenditure accounted for by older consumers



rose from 10.6 percent of total recreation spending to 13.2 percent.

However, the question again arises: Are these changes observed because of underlying changes in the demography of the population or because of changing tastes within different age groups? To answer this question, it is useful to analyze budget shares; that is, we seek to answer the question: What proportion of total expenditures does the average consumer unit in a given age group allocate to a given category of expenditures? For food at home, all age groups experienced a decrease of about 1 percent to 2 percent in the size of their budget share. (For those younger than 65, the share dropped from 15 percent to 14 percent; for those 65 and older, the share started at about 11 percent and dropped to 9 percent or 10 percent, depending on which subgroup one is considering.) Similarly, changes in shares for apparel, shelter and utilities, transportation, and recreation were minimal. Hence, because the budget shares did not change much over time, it is possible to attribute changes in aggregate shares to demographic changes, rather than changes in taste, within the age groups.

One category of spending merits special attention: health care. This category is important for several reasons. First, health care expenditures are expected to be positively correlated with age for adults. Second, much work examining various aspects of health care with data from the Consumer Expenditure Survey has been completed. As noted earlier, works by Hitschler, Abdel-Ghany and Sharpe, and Rubin and Nieswiadomy examined health care for older consumers at least to some degree. Abdel-Ghany and Sharpe compared expenditures of those aged 65 to 74 years and those 75 years and older), while both Hitschler, on the one hand, and Rubin and Nieswiadomy, on the other, examined expenditures for each of these age groups at fixed times—1980 and 1990, for example. Gregory Acs and John Sabelhaus examined trends in health care expenditures from 1980 to 1992, although their focus was on nonelderly households "because most of them have private insurance, while elderly households generally receive insurance through medicare coverage."[15]

Health care expenditures[16] have risen substantially for all groups since 1984. In real terms, those younger than 65 spent about 9 percent more in 1997 than they did in 1984. However, those older than 75 spent more than 20 percent more, and those aged 65 to 74 spent in excess of 26 percent more. As shown in chart 3, older consumers routinely account for a much larger share of aggregate consumer spending on health care than their share of the population. For example, in 1997, those 65 years and older, making up only a bit more than one-fifth of the total population, accounted for nearly one-third of total health care expenditures.

But how are health care dollars allocated? Have there been

Chart 2. **Expenditures of older consumers for selected services,1997 dollars**

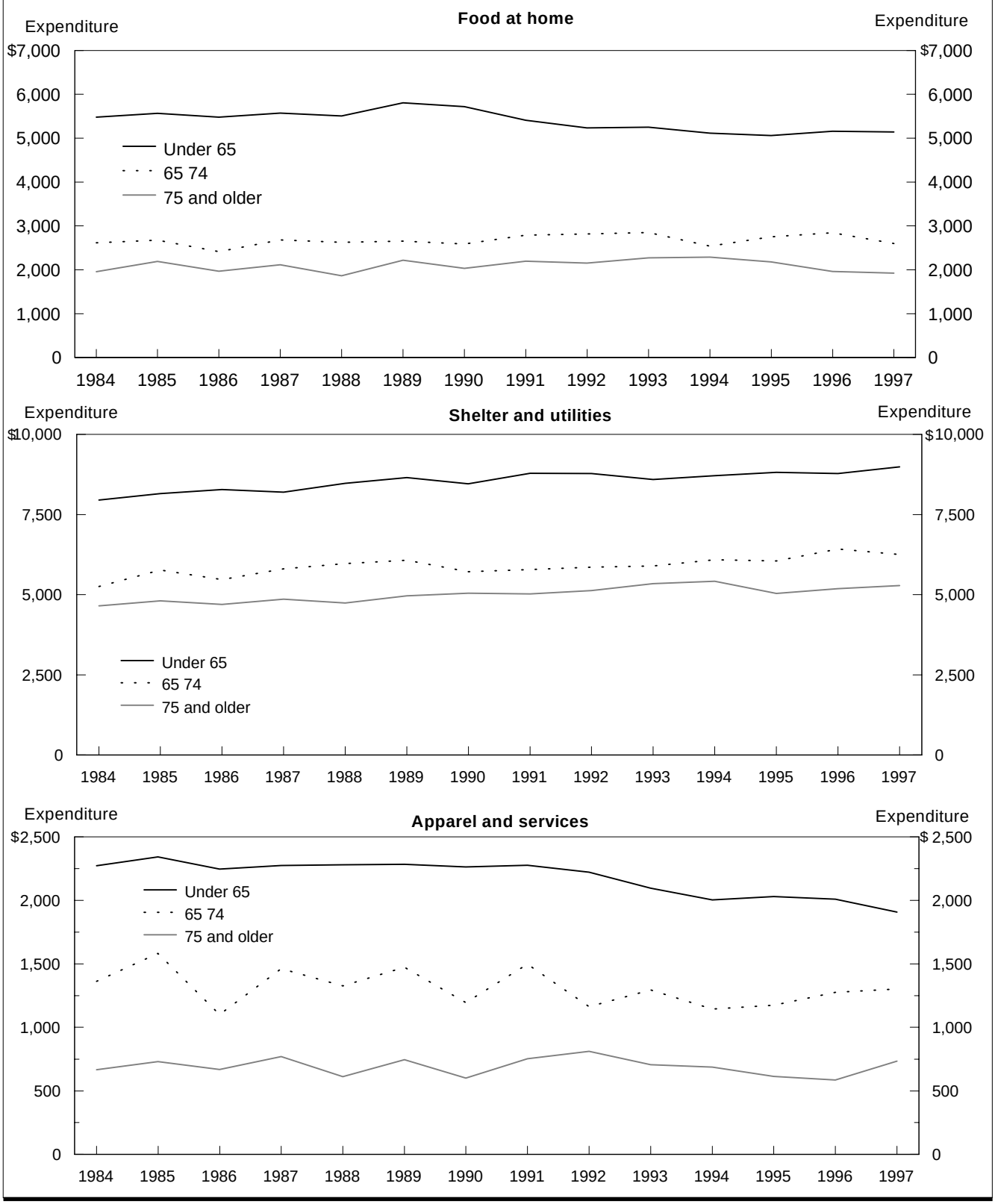
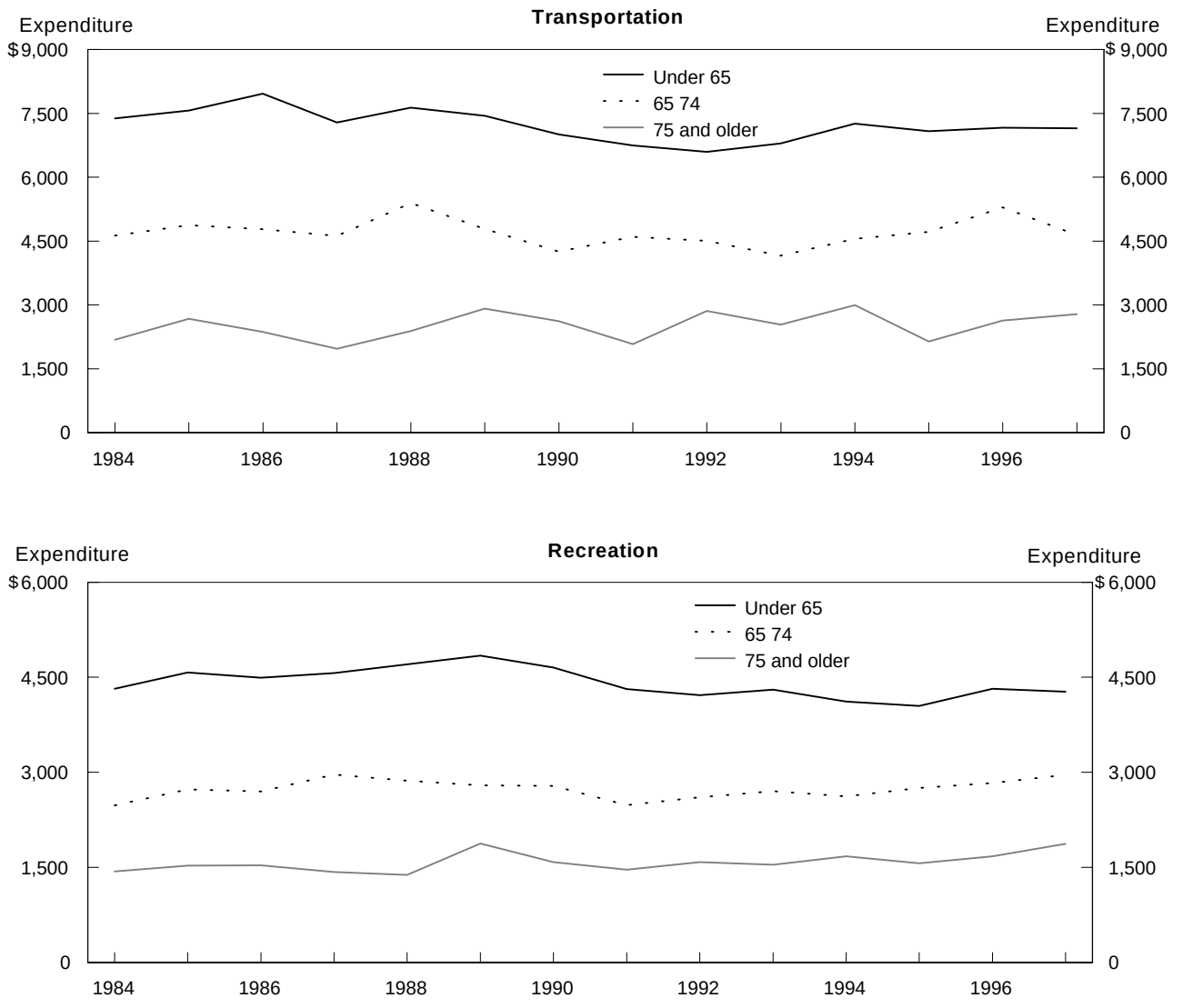


Chart 2. Continued--Expenditures of older consumers for selected services, 1997 dollars



any changes in the way older consumers spend their health care budgets? Shares analysis provides some insight. To start with, health expenditure shares are most volatile for those aged 75 and older. (See chart 4.) For the years 1984 to 1997, as a share of total expenditures, they ranged from a low of 12.7 percent in 1985 to a high of 16.7 percent in 1988. By contrast, for those between the ages of 65 and 74, the share of total expenditures allocated to health care stayed between 8.9 percent (in 1987) and 11.0 percent (in 1993). For those younger than 65, the range was narrowest, from 3.8 percent (from 1985 to 1987) to 4.5 percent (in 1993).

All groups, however, experienced changes in how their health care dollars were spent: a larger share of the health care budget went to health insurance in 1997 than in 1984, regardless of the group considered. (See chart 5.) Although those aged 65 and older consistently allocated a larger share of their health care budget to insurance than those younger than 65, the trend was similar for each group. Those younger than 65 allocated less than one-third of their health care budget (32.8 percent) to health insurance in 1984, compared with nearly half (45.2 percent) in 1997. Those aged 65 to 74 increased their share from 44 percent in 1984 to 53.3 percent in 1997, and the share rose even more for those aged 75 and older, going from 37.9 percent in 1984 to 53.4 percent in 1997.

The increased share for health insurance may explain the concomitant decrease in shares for medical services. (See chart 5.) Again, the two older age groups experienced similar changes in

Chart 3. **Share of aggregate health care expenditures and total population for consumers 65 and older, 1984–97**

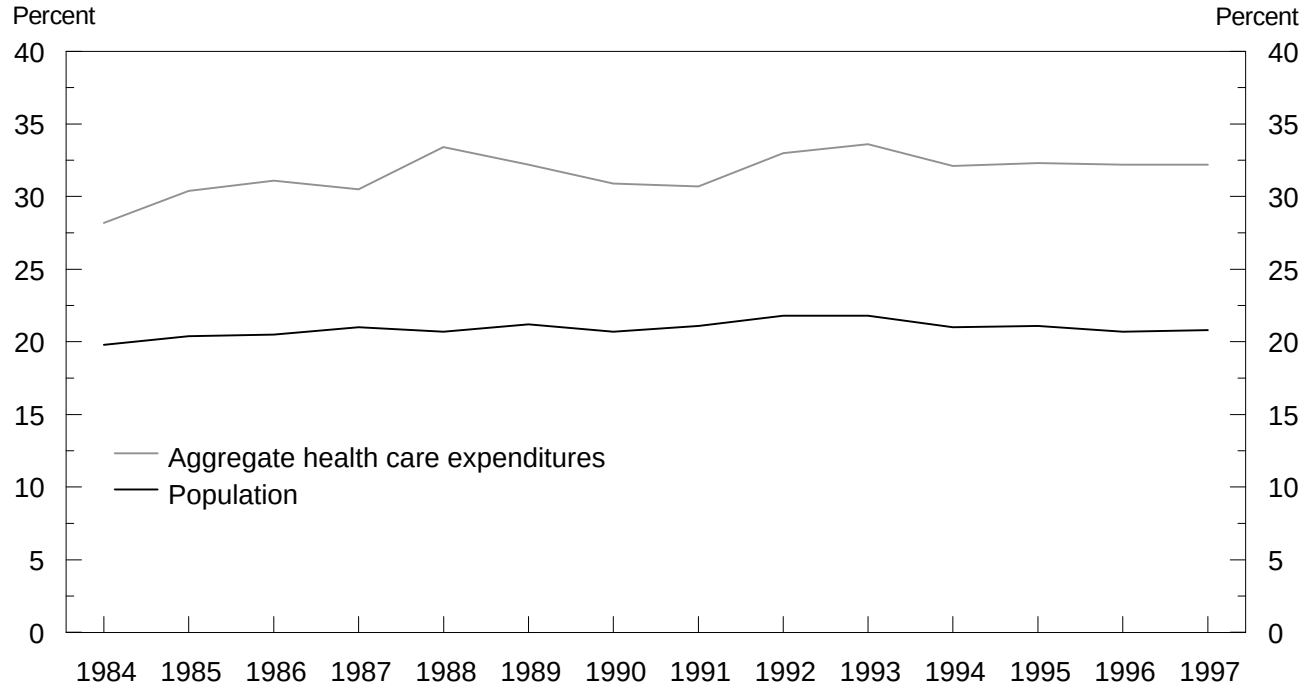


Chart 4. **Health care as a share of total expenditures of elderly, 1984–97**

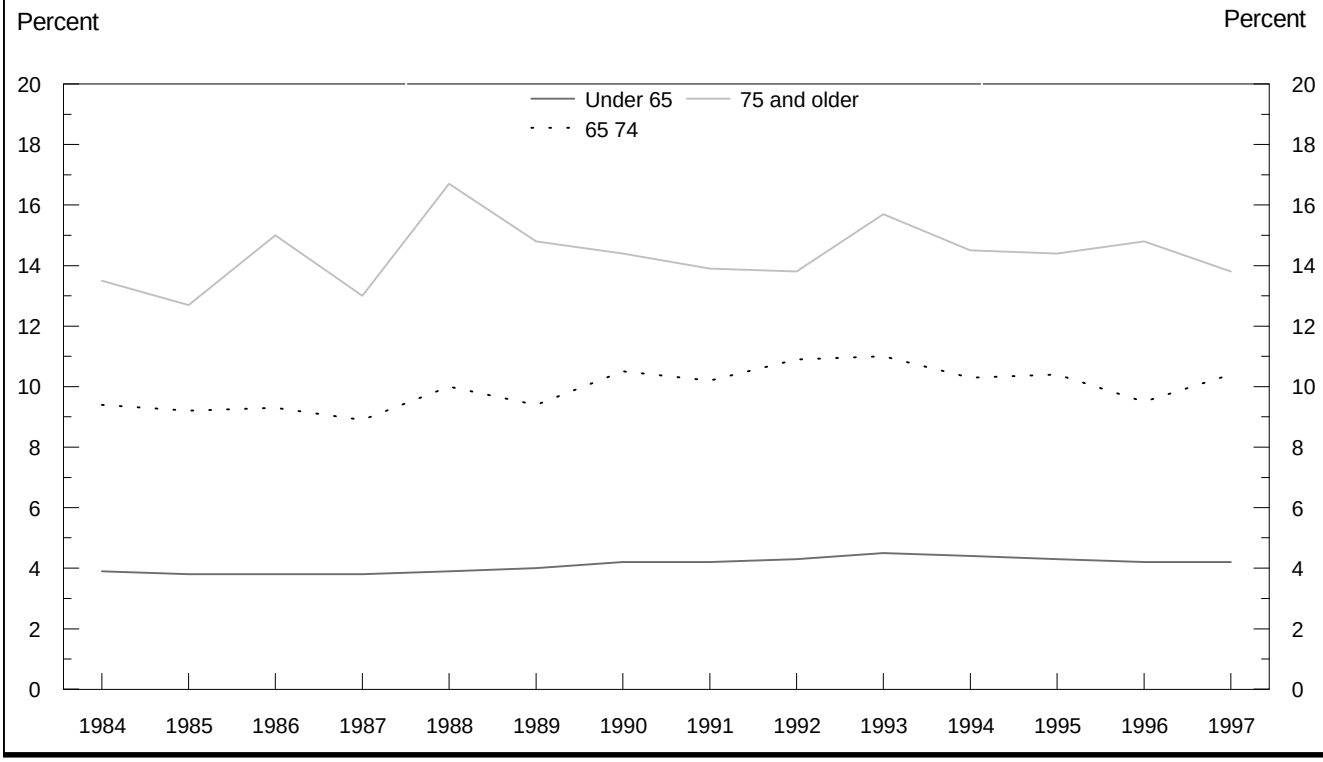
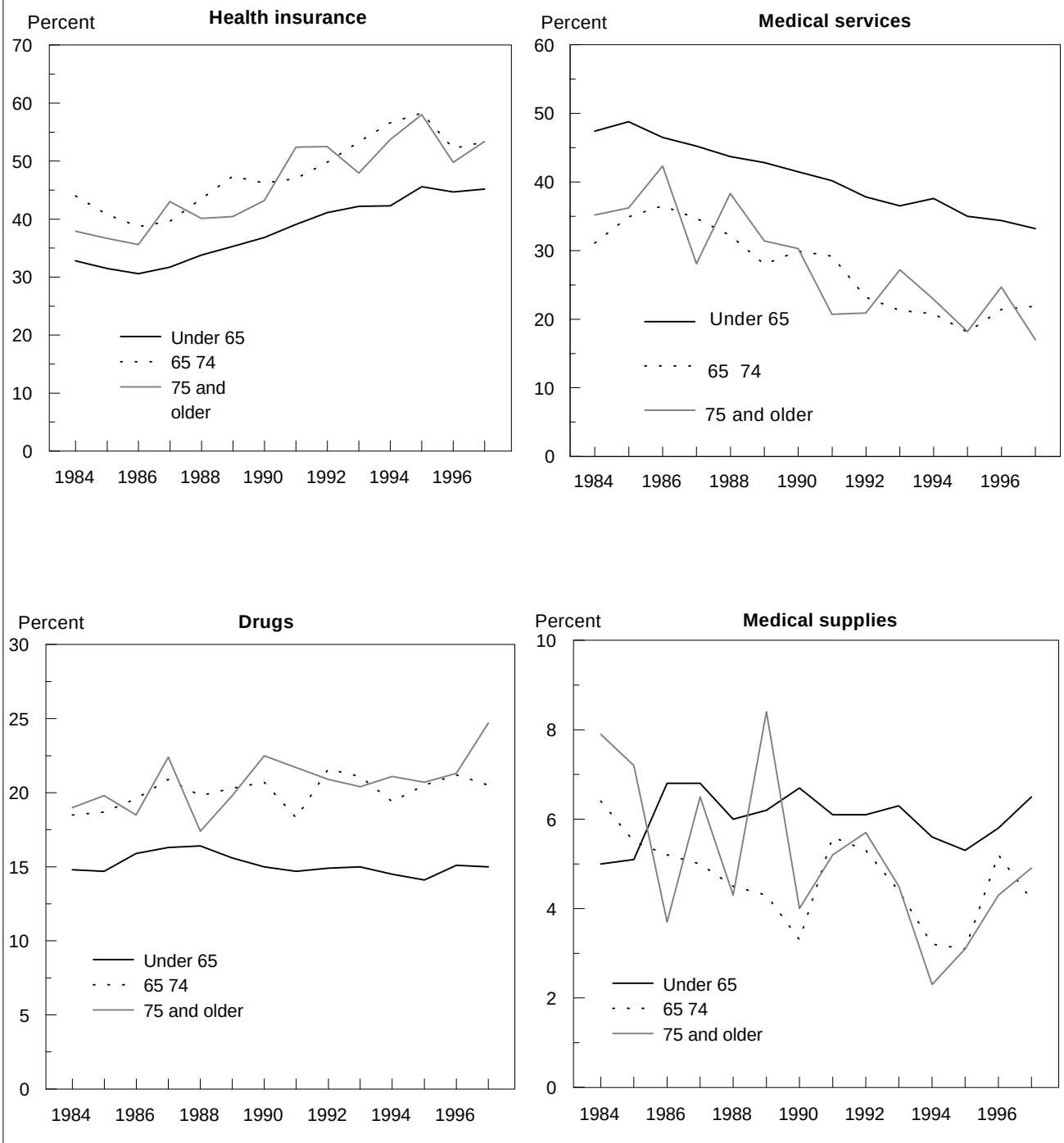


Chart 5. **Selected health services as percent of total expenditures for health care, 1984–97**



shares, decreasing from about one-third of the health care budget for each in 1984 to slightly more than one-fifth of health care spending (21.9 percent) for those aged 65 to 74 in 1997 and about one-sixth of total health care spending (17.0 percent) for those aged 75 and older. It is interesting to note that for both older groups, the shares are less than those for the group under 65 years old. Health insurance is the only health care expenditure component for which this phenomenon obtains over the entire period examined.

Expenditures for drugs (see chart 5) appear to be trending upward slightly as a share of the health care budget, at least for those aged 65 and older, albeit the shares are more volatile for the 75-and-older group. However, for those younger than 65, the shares are fairly stable, ranging from 14.1 percent of health care expenditures (in 1995) to 16.4 percent (in 1988). Spending on medical supplies is both the smallest and the most volatile expenditure in the health care group, but it appears to be trending downward for older consumers and upward for younger consumers. (See chart 5.)

Regression analysis

Thus far, expenditures and expenditure shares have been analyzed in a general way. However, the results have only demonstrated what patterns may be found in the data, not how or why they occur. For example, if the demographic composition of the age groups has changed in any way (for instance, if average family size or level of income has gone up or down), then those changes may account for changing expenditure patterns. Or if the demographic composition has remained stable, but spending patterns have changed for specific members of any or all of the age groups (such as urban consumers), then those patterns could account for changes in total spending for particular goods and services. Regression analysis allows these issues to be explored.

Several types of analysis are used in this article. First, food at home is analyzed using ordinary least squares. Second, the category of shelter and utilities undergoes two types of analysis: first, a probit model is used to test whether a change in the probability of owning or renting has taken place; and second, the owning and renting groups are separated, and an ordinary least squares regression is run on shelter and utilities for each group. The third set of regressions uses the Tobit method to analyze apparel and services, transportation, recreation and related expenditures, and health care. The large number of families reporting no expenditure for each of these items necessitates the use of Tobit to make certain that the results are not biased toward zero.

Although the results in the previous section are taken from the integrated survey results, the data for the regressions come only from the Interview survey. The reason is that when data are published, it is easy enough to produce the integrated results by taking means where appropriate from Interview and Diary survey sources and summing those means together to form an estimate of the average expenditure for a particular item. However, because the samples for the Interview and Diary surveys are independent, there is no way to combine data for individual families. The Interview survey has a longer recall period (3 months) than the Diary survey (data are collected on a daily basis for a total of 2 weeks) and therefore is less subject to lack of data on infrequently purchased items. As noted earlier, the Interview survey collects up to 95 percent of total expenditures through a combination of detailed questions and global estimates, including data on travel expenditures not collected in the Diary survey. Also, the Interview survey collects information on reimbursements for health care expenditures. For all these reasons, the Interview survey is chosen as the source for analysis.

Variables used. In most cases, the dependent variable for each regression is the amount of the expenditure for one of the major categories already described: food at home, shelter and utilities, apparel and services, transportation, recreation and related expenditures, or health care. The one exception is the probit regression for shelter and utilities. The dependent variable there is a binary variable describing whether the family owns or rents its home; the predicted outcome is the probability of owning the home. The regressions are run separately for each of the two older groups.

The regressions have several independent variables in common as well. (Many of these are also used by Abdel-Ghany and Sharpe, but some changes are made in the current study.) The common variables include total expenditures (as a proxy for permanent income[17]), type of family (single male; husband and wife only; all other families), educational attainment of the reference person (high school graduate; attended college), ethnic origin of the reference person (Hispanic; black), number of earners (one; two; three or more), region of residence (Northeast; Midwest; West), and whether the household is located in a rural area. Other than the variable for total expenditures, these are all binary variables. Most of them are straightforward and are included to control for differences in tastes and preferences among the many types of families in the age groups under study. However, other variables are also included that may require further explanation.

The simplest of these additional variables is a series describing housing tenure (own home with a mortgage; renting). The literature has shown that expenditures can differ by housing tenure.[18] (Of course, the variables signifying homeownership and renter status are excluded from the probit model for predicting housing tenure, given the nature of the dependent variable; also, in the ordinary least squares regression for shelter and utilities expenditures, the samples are already divided into homeowners and renters, so it only makes

sense to include mortgage status in the owner group and to omit the renter variable entirely.) Another additional variable controls for the size of the household when three or more members are present. Why control only for this circumstance? By definition, single-member households include only one person; similarly, families consisting of a husband and wife only include two members. The effects of the size and type of family are therefore encapsulated in one variable, at least for these situations. Other families can consist of two members (such as a grandparent and grandchild) or more. For these cases, the effects of family size and type can be (and are) disentangled. Finally, a series of interaction terms is included to test whether there are changes from 1984 to 1997 in the relationship of the selected expenditures to any of the independent variables, including permanent income.

Model-specific variables. In a few cases, certain variables are of obvious use in predicting a particular type of expenditure, but may not be so important in predicting other expenditures. For example, expenditures on transportation clearly are expected to vary with the number of vehicles owned, but it is not clear whether expenditures for apparel and services do so. Similarly, variables accounting for the number of rooms (including bedrooms), bathrooms, and half bathrooms are included in each of the housing regressions (excluding the probit model, because it is the characteristics of the family, and not the dwelling, that are of interest in that case). Finally, in the model for health care expenditures, variables are included to describe whether or not the family received a reimbursement for any component of health care spending (medical services, prescription drugs, or medical supplies). Reimbursements are treated as negative expenditures for the quarter in which they are received; therefore, they lower total health care expenditures for that quarter. Because the Consumer Expenditure Survey does not collect information on whether reimbursements are expected in the future, it is not possible to include a variable to minimize the effect of potentially large expenditures for health care that will eventually be reimbursed.

Finally, in the ordinary least squares models for shelter and utilities, variables for the number of earners are omitted. The reason is that only in 1997 were there any observations for renters who are at least 75 years old and who have more than one earner. Therefore, the regression would not be able to be run properly, given that it tests for changes over time in the relationship between expenditures and number of earners. Because these variables were not statistically significant (at least not at the 95-percent confidence level) for renters between the ages of 65 and 74 or for owners in either age group, the variables were dropped from the ordinary least squares models in order to keep them consistent.

Price changes. Some caution is needed in the interpretation of these results. Before the regressions are computed, all 1984 expenditures (including the dependent variables and permanent income) are adjusted by the Consumer Price Index (CPI) for all goods and services. This is done to convert the nominal 1984 values into "real" 1997 values. However, not all changes in prices are adjusted. For example, suppose that the price of a specific good drops from 1984 to 1997, and therefore, families purchased more of it during the period. Then the nominal value of the expenditure in 1997 may be higher than, lower than, or the same as it was in 1984, depending on how much the price dropped and how much the quantity purchased increased. However, if the nominal value of the expenditure for the good in 1984 is divided by its price in 1984 and the result is multiplied by the good's price in 1997, then the nominal expenditure in 1997 will be greater than the "real" (that is, price-adjusted) value for 1984 (because the adjustment holds prices constant and the quantity purchased increased). The drawback of this method is that information on the price of the good may not be readily available. However, if a CPI value is available for that specific good, then the 1984 expenditure can be divided by the 1984 CPI for the good and multiplied by its 1997 counterpart. The resulting percent change in the adjusted 1984 expenditure and the observed 1997 expenditure would be the same as calculated by this method or the method of using prices directly. In either case, the 1984 nominal expenditure would be converted to a real 1997 expenditure for the selected good. However, the CPI for all goods and services did not drop from 1984 to 1997; instead, the combined prices of all goods and services rose over that period. Therefore, adjusting the expenditure by the change in the overall CPI will *not* have the same effect as adjusting by the specific good's index! (If a good doubles in price and the quantity purchased falls by less than 50 percent, the nominal expenditure still rises, even though less is purchased.) Then what is the reason for adjusting specific expenditures by the overall price change? First, no indexes are readily available for some of the goods and services that are examined. (The category of recreation and related expenditures is one example.) Second, adjusting by the overall CPI still has the advantage of at least controlling for general price changes. For suppose that, in real terms (that is, adjusting by the overall CPI), the expenditure for a specific item has doubled. Then it can be said with certainty that the average family of interest is allocating twice the purchasing power to the good or service in question that it did in the earlier period. Again, we do not know whether price or quantity changes in the later period account for this increase, but we do know that, in real terms, the expenditure makes up a larger share of the budget in 1997 than it did in 1984.

These results should be kept in mind when one is interpreting such factors as the marginal propensity to consume (MPC)

and the (permanent) income elasticity of the selected expenditures. The conventional interpretation of the MPC is that it represents the fraction of each additional dollar that would be allocated toward the purchase of the good in question, assuming that the family under study received an additional dollar from some source. Implicit in this statement is that increased expenditures are a result of increased quantities purchased. However, in the present case, all that can be said for sure is that if the MPC is found to increase over time, then a larger share of the dollar is being spent on the good or service, but again, it is not clear whether this is because prices increased or whether it is because quantities increased. Similarly, income elasticity is usually interpreted to mean the percent increase (or decrease) in the quantity purchased, given a 1-percent increase in income. However, in the present circumstances, it is interpreted as the percent increase in *expenditure* (in constant 1997 dollars) for the good in question, given a 1-percent increase in income.

Sample issues. Before the regressions are run, families whose total health care expenditures are negative (due to reimbursements) are dropped from the sample. This is done for two reasons. First, if included in the health care model, they would obviously cause a problem when the regression model was computed, because a few expenditures would be negative, several would be zero, and most would be positive. It is not clear how the Tobit model would be specified in such a case. However, as noted earlier, it is at least possible to control for situations in which a reimbursement is received for some component of health care, but is not enough to make the entire health care expenditure negative. Therefore, to keep the sample as consistent as possible for the regressions, those families with negative health care expenditures are dropped from it. Second, in some cases, the reimbursement is so large that total expenditures are actually negative. Because total expenditures are used as a proxy for permanent income in these models, eliminating negative health care expenditures ensures that total expenditures will not be negative.

Similarly, a small percentage of families have no value reported for the number of rooms. Because this situation affects only the housing models, these families are omitted just from that sample.

For 1984, the models include 2,341 observations for the 65- to 74-year-old group and 1,609 for the 75-and-older group. In 1997, there were 2,436 observations for the 65- to 74-year-old group and 2,076 for the 75-and-older group. The models are specified to show how relationships between expenditures and characteristics changed over the period for each group. Within each age group, the data for both years are combined, yielding a total of 4,777 observations for the models that include the 65- to 74-year-old group and 3,685 for those that include the 75-and-older group. (For the housing regressions, the sample is 4,710 for the first age group and 3,652 for the second age group.)

The control group. In analyzing the results of the regression techniques, a control group to which families with differing characteristics can be compared was defined. Conventionally, the control group is designed to represent a "typical" sample point. For example, regardless of the year or age group, the majority of older families studied have no earner present. Therefore, one of the characteristics of the "typical" family is that it has no earners. In some cases, some judgment must be used to decide what represents the "typical" family. For example, regardless of the year, single persons constitute the majority of families who are in the second age group. (See table 2.) However, for the first age group, married couples (with no other members present) are the more typical arrangement, accounting for 3 out of 7 households, regardless of the year. Nevertheless, earlier it was shown how family type and family size interrelate. Using singles as the control group, then, provides a logical base on which to build—a married couple is not only a different family type, but it includes exactly one more person than a single family, so the difference in expenditures due to adding an extra person to the family is subsumed in the coefficient for married couples. Furthermore, because most of the singles are female, by specifying single females as members of the control group, differences in tastes for single men and women can be measured by including a variable to indicate whether the family is composed of a single male.

Accordingly, the control group for each regression is made up of families whose reference person is a single female who is (1) not a high school graduate, (2) neither Hispanic nor black, (3) not an earner, (4) a homeowner with no mortgage (except in the regression for shelter and utilities for renters), and (5) living in an urban area in the South. For the purposes of estimating factors such as income elasticity, families are assumed to have average characteristics for their age group where continuous variables (such as total expenditures or number of rooms) are concerned. The control group applies to each age group and each year. Although such a household may not exist, coefficients for other characteristics are shown so that estimates of expenditures or other factors can be computed for whatever group is examined.

A few words on Tobit. Tobit regression is used when there are a substantial number of nonexpenditures reported (as in this study). In other words, if a family did not purchase an item, then the expenditure on that item is recorded as zero dollars.[19] As pointed out in Abdel-Ghany and Sharpe, including these zeros without some sort of adjustment would yield biased results. In such cases, Tobit is useful because it is a two-stage regression procedure. The first stage predicts the

Table 2. Selected characteristics to accompany regression results

Characteristic	65–to–74 age group		75–and–older age group	
	1984	1997	1984	1997
Sample size	2,341	2,436	1,609	2,076
Homeowners	1,804	1,952	1,096	1,571
Reporting number of rooms	1,765	1,897	1,059	1,507
Missing rooms, bathrooms, or half baths	39	55	37	64
Renters	537	484	513	505
Reporting number of rooms	515	461	495	493
Missing rooms, bathrooms, or half baths	22	23	18	12
Percent reporting expenditures:				
Total (quarterly)	100.0	100.0	100.0	100.0
Food at home	99.6	99.6	99.8	99.8
Shelter and utilities:				
Homeowners (room reporters only)	99.8	100.0	99.8	100.0
Renters (room reporters only)	100.0	100.0	100.0	100.0
Apparel and services	84.5	78.7	70.0	67.3
Transportation	91.4	93.7	72.1	80.6
Recreation and related items	92.0	94.7	84.5	91.5
Health care	96.0	97.8	96.2	98.8
Characteristics (percent)				
Family composition:				
Single man	7.9	9.2	9.6	10.6
Single woman	26.9	27.2	47.3	44.3
Husband and wife only	42.3	41.9	27.7	30.6
Other family	22.9	21.7	15.5	14.5
Three or more members	14.4	14.7	5.9	5.3
Reference person:				
Educational attainment:				
Less than high school	48.2	31.9	63.0	39.4
High school graduate	28.8	32.8	16.8	31.4
Attended college	23.0	35.3	20.3	29.2
Ethnic origin:				
Hispanic	3.3	5.5	2.2	3.2
Black	6.0	9.7	5.8	5.3
White or other	90.7	84.8	92.0	91.5
Number of earners:				
Zero	58.6	58.0	84.2	83.0
One	28.5	28.9	13.0	14.0
Two	10.3	10.4	2.1	2.6
Three or more	3.0	2.3	.7	.4
Mortgage status:				
Has mortgage	17.9	19.2	4.4	8.9
No mortgage (owners only)	59.2	61.0	63.7	66.8
Region of residence:				
Northeast	25.2	22.0	26.3	18.4
Midwest	25.8	28.3	28.7	27.6
South	28.8	31.4	28.2	33.1
West	20.1	18.3	16.8	20.9
Living in rural areas	14.8	11.9	15.1	10.9
Receiving reimbursement for health care	1.9	1.1	1.6	1.0
Average number reported:				
Rooms	5.4	5.7	5.0	5.3
Homeowners	5.9	6.1	5.5	5.8
Renters	3.9	4.1	3.9	3.8
Bathrooms	1.3	1.4	1.2	1.3
Homeowners	1.3	1.5	1.2	1.4
Renters	1.0	1.1	1.0	1.1
Half bathrooms	.2	.3	.2	.2
Homeowners	.3	.4	.2	.3
Renters	([1])	.1	.1	.1
Vehicles	1.5	1.8	.8	1.2

[1] Less than 0.05.

probability of purchase of a given item (using a probit technique), and the second stage predicts how much is spent on the item, assuming that it is in fact purchased. However, Tobit coefficients cannot be interpreted in the same way as ordinary least squares coefficients, because a change in one of the independent variables (say, an increase in permanent income) may influence the outcome not only by increasing the amount of the purchase, but also by influencing the probability of making the purchase in the first place.[20] The proper adjustments are made in each case before calculating MPCs and income elasticities for results from Tobit regressions.

In using regression results to estimate income elasticities, it is necessary to have a value both for expenditures for the good or service under study and for total expenditures (permanent income). The data from the Interview survey are available in a quarterly format. For regression purposes, each quarter is treated independently, although the same family may appear more than once in the sample. Because of the quarterly availability, expenditures in table 3 are quarterly averages for the year in which the consumer unit participated in the interview.[21] For purposes of evaluation, the control group is assumed to have average quarterly expenditures at both the aggregate (that is, total expenditures) and the component (for example, food at home) level. In the Tobit regressions, though, expenditures for specific goods and services (apparel and services, transportation, recreation and related items, and health care) are *not* quarterly averages, but are predicted quarterly expenditures for a member of the reference group. Again, this is because Tobit results require special adjustments before interpretation, and it is necessary to use predicted expenditures to obtain elasticity estimates.

Food at home. At least for those 65 to 74 years old, relationships between characteristics and expenditures appear to have been remarkably stable over time. Although several characteristics have statistically significant parameter esti-

Table 3. Results derived from regression analyses, by age group

Model and category	65–to–74 age group		75–and–older age group	
	1984	1997	1984	1997
Total expenditures (quarterly)	$6,016	$6,513	$3,962	$4,922
Food at home:				
Expenditure	$813	$782	$568	$615
Marginal propensity to consume	[1].030	[1].020	[1].020	[1].016
Income elasticity	.222	.167	.140	.128
Shelter and utilities, owners:				
Expenditure	$1,358	$1,561	$1,150	$1,275
Marginal propensity to consume	[1].072	[1].059	[1].047	[1].065
Income elasticity	.319	.246	.162	.251
Shelter and utilities, renters:				
Expenditure	$1,241	$1,572	$1,221	$1,588
Marginal propensity to consume	[1].094	.081	[1].119	[1].189
Income elasticity	.456	.336	.386	.586
Tobit results				
Apparel and services:				
Expenditure (predicted)	$270	$222	$119	$107
Marginal propensity to consume	[1].023	.018	[1].007	[1].012
Income elasticity	.512	.528	.233	.552
Transportation:				
Expenditure (predicted)	$1,710	$1,511	$438	$587
Marginal propensity to consume	[1].321	[1].240	[1].035	[1].093
Income elasticity	1.129	1.034	.317	.780
Recreation and related items:				
Expenditure (predicted)	$556	$606	$393	$561
Marginal propensity to consume	[1].066	[1].057	[1].031	[1].059
Income elasticity	.714	.613	.313	.518
Health care:				
Expenditure (predicted)	$612	$708	$700	$708
Marginal propensity to consume	[1].028	[1].042	[1].053	[1].020
Income elasticity	.275	.386	.300	.139

[1]Indicates that the coefficient for the marginal propensity to consume is statistically significant at the 95-percent confidence level. For 1984, this means that the marginal propensity to consume is significantly different from zero. For 1997, this means that the marginal propensity to consume is significantly different than it was in 1984.

mates, none of these variables has a statistically significant parameter estimate when interacted with the binary variable which indicates that the data are from 1997 (table 4). In other words, some characteristics, such as type of family and region of residence (at least, the Northeast) appear to have a bearing on food-at-home expenditures for the 65- to 74-year-old group, but these relationships do not appear (at the 95-percent confidence level) to have changed over time. For those 75 and older, however, a few changes are noted. First, families with multiple members appear to have spent less for food at home in 1997 than they did in 1984, as did families in the Midwest. Families with more than one earner, however, appeared to have spent more, as the coefficients for both two-earner and multiple-earner families are statistically significant for 1997 (but not for 1984). The intercept also increased in 1997 for the 75-and-older group (but not for the 65- to 74-year-olds), indicating that expenditures were higher for the control group in 1997.

For both age groups, though, the MPC decreased, as shown in table 3. This is consistent with the increase in expenditures for food away from home for both groups. Note that although total expenditures for the older group increased by a larger proportion (24 percent) than food expenditures (8 percent), a fact that, all other things being equal, would increase the income elasticity of food expenditures, the decrease in the MPC was enough to offset these changes and to cause the elasticity to fall, if slightly.

Shelter and utilities. Regardless of the year, the majority of control group members are predicted to be homeowners. In fact, the predicted values are remarkably similar for each age group, regardless of the year, despite the higher predicted probability of ownership for each group in 1997. In 1984, for example, the predicted probability of ownership for 65- to 74-year-olds is 58 percent, compared with 56 percent for the 75-or-older group. In 1997, the probability increases to 72 percent for the former and 76 percent for the latter.[22] In neither age group is the intercept (indicating a "base" probability for 1984) statistically significant, although for each of them, the coefficient for 1997 is positive and statistically significant at the 99-percent confidence level. The income parameter is statistically significant (again at the 99-percent level) for the 65- to 74-year-old group in 1984, but there is no significant change in the relationship between their probability of owning and permanent income for 1997. For the 75-and-older group, the income effect is not statistically significant in 1984,[23] and there is no evidence of a change in the relationship by 1997. Households consisting of a husband and wife only are more likely to own than are single females in either year, regardless of the age group. Similarly, families with three or more members are more likely to own, regardless of the year.[24] Probability of ownership increases with education for the younger age group, but not for the older. However, the probability of ownership is lower for Hispanics in each age group and for blacks in the older group, but not for blacks in the younger group. Probability of ownership also decreases significantly for Northeasterners in 1997, although it is higher for rural families in each year. (See table 5.)

Expenditure patterns for owners show different changes by age group in each year. For example, for 65- to 74-year-olds in 1997, both the intercept and the income coefficient decrease significantly. (See table 6.) However, for those 75 and older in 1997, both coefficients increase, although the change in the intercept is not statistically significant. Note that for the latter group, these changes, coupled with the aforementioned increase in total expenditures (24 percent) and a smaller increase in shelter and utilities expenditures (11 percent), contribute to a substantial increase in income elasticity for owners in the group. However, for the younger group, estimated income elasticity is substantially lower for 1997 than for 1984. Again, the opposite of the older group holds for the younger group: a smaller MPC in 1997 is accompanied by an increase in total expenditure (8 percent) that is smaller than the percent increase in expenditures for shelter and utilities (15 percent), all of which act to make the elasticity for the group smaller in 1997 than 1984.

For renters in both age groups, expenditure patterns are remarkably stable. For both age groups, expenditures appear to have increased in 1997 for those who attended college. (See table 7.) Other than this, the only statistically significant variables for the 65- to 74-year-old group in 1997 are family size (multiple members) and regional variables; expenditures for this group appear to have risen for residents of the Midwest and West. For those 75 and older, the intercept is significantly larger in 1997, as is the MPC. Also, the coefficient for number of bathrooms is statistically significant (and negative) for 1997. Both age groups are fairly homogeneous, with few other parameter estimates being statistically significant, regardless of the year. For the younger age group, only coefficients for family type (husband and wife only; other families), rural residence, and number of rooms are statistically significant. The rural coefficient is negative, but the others are positive. For the older group, living in a rural area is also associated with lower expenditures, while the numbers of bathrooms and half bathrooms appear to increase expenditures for housing for this group.

Although these expenditures are similar for each age group in each year, MPCs and elasticities are quite different for each group of renters and, in fact, change differently over time. (See table 3.) For the younger age group, the MPC for 1997 does not differ from that for 1984 in any statistically significant way. For the older group, however, the MPC increases substantially from 1984 to 1997. Despite a similar increase for both groups in expenditures for shelter and utilities (27 per-

Table 4. Regression results, food-at-home model

Variable	65-to-74 age group				75-and-older age group			
	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|
Intercept	403.101	30.357	13.278	0.000	338.513	24.321	13.918	0.000
Interaction, 1997	–11.200	42.766	–.262	.793	94.069	31.917	2.947	.003
Total expenditures	.030	.002	15.164	.000	.020	.002	10.765	.000
Interaction, 1997	–.010	.003	–3.822	.000	–.004	.002	–1.970	.049
Family composition:								
Single man	–5.935	37.995	–.156	.876	–8.501	31.038	–.274	.784
Interaction, 1997	–19.373	52.031	–.372	.710	–28.626	40.560	–.706	.480
Husband and wife only	285.910	25.357	11.276	.000	298.351	22.419	13.308	.000
Interaction, 1997	31.346	35.033	.895	.371	–43.760	29.579	–1.479	.139
Other family	250.735	38.796	6.463	.000	256.624	33.671	7.622	.000
Interaction, 1997	3.104	55.841	.056	.956	–23.902	44.958	–.532	.595
At least three members	399.208	43.666	9.142	.000	336.898	51.675	6.520	.000
Interaction: 1997	–95.512	62.111	–1.538	.124	–262.075	68.098	–3.849	.000
Education of the reference person:								
High school graduate	–36.895	22.863	–1.614	.107	29.567	24.503	1.207	.228
Interaction, 1997	28.102	33.007	.851	.395	–75.452	30.809	–2.449	.014
Attended college	–25.177	25.857	–.974	.330	21.562	23.381	.922	.357
Interaction, 1997	48.397	35.719	1.355	.176	41.324	30.475	1.356	.175
Ethnic origin of the reference person:								
Hispanic	–56.893	54.281	–1.048	.295	7.585	61.002	.124	.901
Interaction, 1997	40.836	68.774	.594	.553	42.735	75.506	.566	.571
Black	–80.881	41.479	–1.950	.051	–29.130	38.519	–.756	.450
Interaction, 1997	41.855	52.705	.794	.427	–18.202	52.035	–.350	.727
Number of earners:								
One earner	–7.551	23.043	–.328	.743	14.929	29.006	.515	.607
Interaction, 1997	–37.725	32.305	–1.168	.243	70.552	38.168	1.848	.065
Two earners	–43.355	36.701	–1.181	.238	–137.214	71.780	–1.912	.056
Interaction, 1997	–12.542	50.238	–.250	.803	291.068	89.199	3.263	.001
Three or more earners	127.267	64.893	1.961	.050	–164.309	111.276	–1.477	.140
Interaction, 1997	180.006	95.493	1.885	.060	1150.001	165.953	6.930	.000
Housing tenure:								
Own home, no mortgage	78.162	26.139	2.990	.003	1.755	44.296	.040	.968
Interaction, 1997	–9.083	36.161	–.251	.802	50.831	52.364	.971	.332
Renter	12.231	24.658	.496	.620	–30.740	20.080	–1.531	.126
Interaction, 1997	4.793	35.605	.135	.893	–24.359	27.756	–.878	.380
Region of residence:								
Northeast	67.467	26.394	2.556	.011	40.298	24.917	1.617	.106
Interaction, 1997	10.329	37.171	.278	.781	–26.421	33.747	–.783	.434
Midwest	–49.656	25.821	–1.923	.055	–11.106	23.869	–.465	.642
Interaction, 1997	37.644	35.447	1.062	.288	–71.070	31.118	–2.284	.022
West	13.328	28.120	.474	.636	46.241	28.297	1.634	.102
Interaction, 1997	45.233	39.414	1.148	.251	–28.196	35.704	–.790	.430
Degree of urbanization:								
Rural	–42.120	27.580	–1.527	.127	–4.654	25.766	–.181	.857
Interaction, 1997	24.677	40.150	.615	.539	–20.702	36.031	–.575	.566

Table 5. Regression results, probability-of-homeownership model

Variable	65-to-74 age group			75-and-older age group		
	Parameter estimate	Standard error	Pr > chi-square	Parameter estimate	Standard error	Pr > chi-square
Intercept	–0.064	0.090	0.477	0.062	0.090	0.491
Interaction, 1997	.389	.129	.003	.521	.123	.000
Total expenditures	4.42×10^{-5}	1.00×10^{-5}	1.00×10^{-4}	2.16×10^{-5}	1.20×10^{-5}	.076
Interaction, 1997	-6.71×10^{-6}	1.30×10^{-5}	6.05×10^{-1}	8.65×10^{-7}	1.50×10^{-5}	.954
Family composition:						
Single man	–.007	.108	.946	.354	.116	.002
Interaction, 1997	–.453	.149	.002	–.180	.154	.242
Husband and wife only	.901	.081	.000	.942	.092	.000
Interaction, 1997	–.216	.115	.061	–.077	.125	.539
Other family	.183	.114	.110	.592	.131	.000
Interaction, 1997	.083	.170	.628	–.178	.182	.328
At least three members	.689	.141	.000	.684	.268	.011
Interaction, 1997	–.370	.203	.068	–.425	.339	.211
Education of the reference person:						
High school graduate	.191	.075	.011	.144	.098	.144
Interaction, 1997	.072	.108	.503	–.191	.125	.127
Attended college	.423	.090	.000	.062	.095	.511
Interaction, 1997	–.033	.123	.786	-.053	.125	.671
Ethnic origin of the reference person:						
Hispanic	–.562	.167	.001	–.658	.223	.003
Interaction, 1997	.178	.213	.405	–.129	.278	.644
Black	–.169	.127	.183	–.513	.147	.001
Interaction, 1997	–236	.160	.141	.112	.200	.577
Number of earners:						
One earner	.067	.077	.387	–029	.121	.808
Interaction, 1997	–.171	.109	.118	.344	.168	.041
Two earners	–.069	.130	.597	5.223	2,991.958	.999
Interaction, 1997	–.006	.186	.976	–5.222	2,991.958	.999
Three or more earners	.651	.348	.062	4.914	4,988.488	.999
Interaction, 1997	.156	.538	.772	–4.835	4,988.488	.999
Region of residence:						
Northeast	–.094	.087	.279	–.251	.099	.011
Interaction, 1997	–.281	.123	.023	–.292	.135	.031
Midwest	.064	.086	.456	–.039	.096	.688
Interaction, 1997	–.016	.122	.895	–.322	.128	.012
West	–.090	.094	.341	.035	.113	.755
Interaction, 1997	–.104	.134	.436	–.294	.146	.044
Degree of urbanization:						
Rural	.229	.091	.012	.302	.108	.005
Interaction, 1997	.194	.148	.191	–185	.155	.234

Note: In this form of regression analysis, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical signigicance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level.

Table 6. Regression results, shelter and utilities (owners) model

Variable	65–to–74 age group				75–and–older age group			
	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|
Intercept	445.260	108.100	4.119	0.000	–54.221	141.541	–0.383	0.702
Interaction, 1997	–464.748	152.016	–3.057	.002	170.217	186.836	.911	.362
Total expenditures	.072	.005	15.302	.000	.047	.006	8.123	.000
Interaction, 1997	–.013	.006	–2.049	.041	.018	.007	2.533	.011
Family composition:								
Single man	–204.194	110.479	–1.848	.065	106.234	115.604	.919	.358
Interaction, 1997	248.420	150.469	1.651	.099	–104.129	147.639	–.705	.481
Husband and wife only	–151.095	63.646	–2.374	.018	35.217	75.355	.467	.640
Interaction, 1997	71.138	86.680	.821	.412	–43.215	98.258	–.440	.660
Other family	–155.225	100.808	–1.540	.124	–33.587	110.621	–.304	.761
Interaction, 1997	156.767	140.102	1.119	.263	–115.585	144.753	–.798	.425
At least three members	52.346	104.176	.502	.615	212.082	146.765	1.445	.149
Interaction, 1997	19.861	146.908	.135	.893	–145.753	198.120	-.736	.462
Education of the reference person:								
High school graduate	45.294	57.418	.789	.430	113.220	85.050	1.331	.183
Interaction, 1997	30.361	82.367	.369	.712	-74.051	106.894	-.693	.489
Attended college	157.256	64.214	2.449	.014	140.428	85.810	1.637	.102
Interaction, 1997	118.202	89.025	1.328	.184	9.949	109.237	.091	.927
Ethnic origin of the reference person:								
Hispanic	–43.272	151.289	–.286	.775	–287.103	263.950	–1.088	.277
Interaction, 1997	108.419	188.687	.575	.566	426.797	320.775	1.331	.184
Black	81.701	115.029	.710	.478	46.369	148.303	.313	.755
Interaction, 1997	–129.656	144.343	–.898	.369	101.825	196.315	.519	.604
Region of residence:								
Northeast	353.452	67.104	5.267	.000	471.535	89.669	5.259	.000
Interaction, 1997	224.081	94.348	2.375	.018	3.596	120.512	.030	.976
Midwest	198.275	64.237	3.087	.002	55.688	84.069	.662	.508
Interaction, 1997	–18.387	87.090	–.211	.833	2.600	108.152	.024	.981
West	–54.289	69.890	–.777	.437	43.155	98.091	.440	.660
Interaction, 1997	234.287	97.208	2.410	.016	205.410	121.986	1.684	.092
Degree of urbanization:								
Rural	–216.271	68.750	–3.146	.002	–116.735	89.125	–1.310	.190
Interaction, 1997	53.357	96.946	.550	.582	96.479	121.391	.795	.427
Housing characteristics:								
Number of rooms	–17.867	18.604	–.960	.337	50.018	23.878	2.095	.036
Interaction, 1997	54.208	24.381	2.223	.026	–25.294	31.329	–.807	.420
Number of bathrooms	294.281	50.486	5.829	.000	392.340	69.656	5.633	.000
Interaction, 1997	–23.303	66.918	–.348	.728	–146.041	87.581	–1.668	.096
Number of half bathrooms	126.971	47.143	2.693	.007	73.793	70.116	1.052	.293
Interaction, 1997	22.952	62.252	.369	.712	97.979	89.582	1.094	.274
Home owned without mortgage	344.378	57.819	5.956	.000	477.952	127.282	3.755	.000
Interaction, 1997	461.323	79.644	5.792	.000	233.220	151.309	1.541	.123

Table 7. Regression results, shelter and utilities (renters) model

Variable	65-to-74 age group				75-and-older age group			
	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|	Parameter estimate	Standard error	*T* for H_0: parameter = 0	Prob > |*T*|
Intercept	277.627	146.632	1.893	0.059	–280.046	217.740	–1.286	0.199
Interaction, 1997	–243.468	197.823	–1.231	.219	883.601	270.361	3.268	.001
Total expenditures	.094	.012	8.142	.000	.119	.016	7.554	.000
Interaction, 1997	–.013	.014	–.979	.328	.070	.020	3.488	.001
Family composition:								
Single man	132.063	85.857	1.538	.124	–50.840	141.541	–.359	.720
Interaction, 1997	74.820	116.399	.643	.521	134.124	188.141	.713	.476
Husband and wife only	218.094	85.741	2.544	.011	117.967	121.355	.972	.331
Interaction, 1997	160.525	120.394	1.333	.183	112.870	175.400	.644	.520
Other family	225.566	96.576	2.336	.020	72.811	152.779	.477	.634
Interaction, 1997	70.161	152.227	.461	.645	41.933	223.120	.188	.851
At least three members	–57.687	132.499	–.435	.663	142.728	406.379	.351	.726
Interaction, 1997	394.436	192.920	2.045	.041	6.667	496.083	.013	.989
Education of the reference person:								
High school graduate	106.656	66.696	1.599	.110	212.486	116.709	1.821	.069
Interaction, 1997	25.699	98.360	.261	.794	–174.139	148.485	–1.173	.241
Attended college	92.972	86.613	1.073	.283	189.409	106.645	1.776	.076
Interaction, 1997	256.266	117.398	2.183	.029	530.867	149.955	3.540	.000
Ethnic origin of the reference person:								
Hispanic	227.877	119.722	1.903	.057	–111.584	211.851	–.527	.599
Interaction, 1997	–298.195	159.130	–1.874	.061	–58.818	268.346	–.219	.827
Black	–160.968	108.217	–1.487	.137	–223.037	159.441	–1.399	.162
Interaction, 1997	–28.301	133.514	–.212	.832	–152.416	212.867	–.716	.474
Region of residence:								
Northeast	2.179	77.630	.028	.978	94.570	110.298	.857	.391
Interaction, 1997	207.025	111.100	1.863	.063	–130.889	156.927	–.834	.404
Midwest	–23.460	78.132	–.300	.764	43.468	111.086	.391	.696
Interaction, 1997	260.096	116.720	2.228	.026	–42.073	156.615	–.269	.788
West	143.015	83.572	1.711	.087	92.550	130.487	.709	.478
Interaction, 1997	247.338	120.923	2.045	.041	–155.074	176.691	–.878	.380
Degree of urbanization								
Rural	–350.615	91.482	–3.833	.000	–323.272	147.021	–2.199	.028
Interaction, 1997	-83.821	149.703	–.560	.576	–141.411	214.027	–.661	.509
Housing characteristics:								
Number of rooms	69.507	24.192	2.873	.004	49.805	31.836	1.564	.118
Interaction, 1997	48.391	35.358	1.369	.171	–65.032	45.922	–1.416	.157
Number of bathrooms	195.026	112.982	1.726	.085	809.720	185.694	4.361	.000
Interaction, 1997	49.573	144.066	.344	.731	–599.729	208.867	–2.871	.004
Number of half bathrooms	166.061	136.634	1.215	.225	490.383	177.226	2.767	.006
Interaction, 1997	–160.828	173.546	–.927	.354	–296.626	232.655	–1.275	.203

cent for the younger and 30 percent for the older), the elasticities move in opposite directions. For the younger group, the elasticity falls by more than one-fourth its original value, from 0.456 to 0.336. However, for the older group, the elasticity increases by more than half, from 0.386 to 0.586.

Apparel and services. The 65- to 74-year-old age group exhibits remarkably stable and homogeneous expenditure patterns for apparel and services. (See table 8.) Single men are predicted to spend less than single women for these items, and these expenditures also appear to increase with education. (The coefficient for high school graduates is positive and statistically significant, and the coefficient for at least some college is larger than that for high school graduates and also statistically significant.) Otherwise, no coefficients are statistically significant for this expenditure for the younger age group, regardless of the year.

On the other hand, the group 75 years and older exhibits more diversity in expenditures for apparel and services. Family type (husband and wife only; other families) and family size (multiple members) are statistically significant predictors of expenditures. In each case, the main coefficient for the group is positive, with the 1997 parameter estimate negative. However, the coefficients vary as to magnitude and statistical significance. For example, the coefficient for husband and wife only is statistically significant, but the change for 1997 is not. The coefficients for multiple-member households exhibit a similar pattern, except that the 1997 coefficient is larger in absolute value than the main coefficient. It is not statistically significant at the 95-percent confidence level, but is nearly so. (The *p*-value is 0.0545.) These expenditures are also predicted to increase with education and to be higher for the Northeast in 1997 than in 1984. Although neither the main coefficient nor the 1997 coefficient is statistically significant for two-earner households in the 75-and-older group, expenditures are predicted to be greater for one-earner and multiple-earner households than for those with no earner. (Both of the coefficients for one-earner families are positive and statistically significant. For multiple earners, the first is positive and statistically significant, while the second is negative and not statistically significant; it is also smaller in absolute value than the main coefficient.)

For 65- to 74-year-olds, there is little change in MPC or elasticity. (See table 3.) Although slightly lower in 1997, the MPC is not statistically significantly different that year from it was in 1984. However, for the 75-or-older group, there are notable changes: the MPC nearly doubles, from 0.007 to 0.012, and the elasticity more than doubles, from 0.233 to 0.552. The proportional response in elasticity is greater than the proportional response in MPC because of a decrease in expenditures for apparel and services for this group, despite increased total expenditures.

Transportation. The predicted probability of incurring an expenditure for transportation (derived from the first stage of the Tobit regression) is much different for the two age groups. For control group members in the younger age group, the predicted probability decreases from 73 percent to 69 percent from 1984 to 1997. For the older group, however, the probability rises from 35 percent to 43 percent over the same period. However, regardless of the year, this expenditure category exhibits the largest gap in probability of incurring an expenditure of all expenditure categories tested.

In each age group, there are only a few characteristics with statistically significant coefficients (see table 9), but the second group has even fewer than the first. As expected, number of vehicles is a statistically significant predictor of expenditures for both groups. For the 65- to 74-year-old group, only the main coefficient is statistically significant; for the 75-and-older group, the vehicle coefficient for 1997 is also statistically significant.

For both age groups, there are statistically significant changes in the MPC for transportation. (See table 3.) Despite a substantial decrease in the MPC for the younger age group, transportation expenditures remain a luxury good, with an elasticity estimated to be greater than unity in both periods. For the older group, the MPC increases substantially—about 166 percent—from 1984 to 1997. The income elasticity of transportation for the 75-and-older group also more than doubles, rising about 146 percent. Nevertheless, transportation expenditures remain a necessity, with elasticity less than unity in each year.

Recreation and related items. Expenditures for recreation and related items are also mostly unaffected by changes in underlying tastes and preferences among the members of the group. For the 65- to 74-year-olds, for example, only a few characteristics have coefficients that distinguish them in a statistically significant way from the control group. (See table 10.) However, not one of these coefficients changes in a statistically significant way for the 1997 data. Only two characteristics—other families and at least some college—exhibit statistically significant changes in 1997 for those 75 years and older. (West is significant at the 90-percent level.)

Nevertheless, there is a significant change in the MPC for each group. (See table 3.) For the younger group, a slight, but statistically significant, decline in the MPC led to a slightly lower income elasticity in 1997. The MPC was almost completely responsible for this change in elasticity, as the increase in for recreation and related items (9 percent) was nearly the same as the increase in total expenditures (8 percent) for that age group. For the older group, however, the MPC nearly doubled, from 0.031 in 1984 to 0.059 in 1997. But in this case, the increase in elasticity (0.313 to 0.518), while substantial, was smaller in terms of percentages. This is again because expenditures for recreation and related items rose nearly 43 percent for the group from 1984 to 1997, compared with 24 percent for total expenditures.

Table 8. Regression results, apparel and services model

Variable	65-to-74 age group			75-and-older age group		
	Parameter estimate	Standard error	Pr > chi-square	Parameter estimate	Standard error	Pr > chi-square
Intercept	–46.8943	30.5691	0.1250	–95.4134	25.2138	0.0002
Interaction, 1997	–76.8399	43.4418	.0769	–96.1941	33.1158	.0037
Total expenditures	.0350	.0020	.0001	.0159	.0018	.0001
Interaction, 1997	–.0025	.0026	.3254	.0108	.0019	.0001
Family composition:						
Single man	–106.3894	38.9776	.0063	–43.8973	32.6633	.1790
Interaction, 1997	36.0780	53.6042	.5009	–28.5791	42.7659	.5040
Husband and wife only	–19.6102	25.4021	.4401	56.9469	22.9020	.0129
Interaction, 1997	12.5961	35.3389	.7215	–28.3039	29.9428	.3445
Other family	-42.1493	39.2241	.2826	48.7065	34.2793	.1554
Interaction, 1997	92.5978	56.3834	.1005	–103.9181	46.1319	.0243
At least three members	46.3191	43.7829	.2901	105.4164	52.0942	.0430
Interaction, 1997	–82.3343	62.3292	.1865	–132.4358	68.8734	.0545
Education of the reference person:						
High school graduate	58.6025	22.9001	.0105	45.3923	24.9450	.0688
Interaction, 1997	4.9306	33.3886	.8826	1.9453	31.6564	.9510
Attended college	145.2861	25.6761	.0001	89.2610	23.6212	.0002
Interaction, 1997	–27.0341	35.7986	.4501	21.4167	30.9522	.4890
Ethnic origin of the reference person:						
Hispanic	17.1525	54.2737	.7520	–68.8128	63.4958	.2785
Interaction, 1997	–10.6444	69.3377	.8780	84.6424	78.5919	.2815
Black	28.4361	42.0365	.4987	–46.3271	40.3884	.2514
Interaction, 1997	–18.1598	53.7475	.7355	60.4512	54.2782	.2654
Number of earners:						
One earner	15.6418	23.1024	.4984	62.3816	29.1545	.0324
Interaction, 1997	28.0304	32.4654	.3879	91.6086	38.3732	.0170
Two earners	45.6717	36.2725	.2080	82.8707	71.4754	.2463
Interaction, 1997	47.4833	49.8324	.3407	–30.2634	89.3942	.7350
Three or more earners	–67.3820	64.5646	.2967	199.3111	109.0852	.0677
Interaction, 1997	132.3488	95.2680	.1648	–59.3506	163.0817	.7159
Housing tenure:						
Own home, no mortgage	25.1384	26.0351	.3343	124.6274	44.3843	.0050
Interaction, 1997	–43.9434	36.2234	.2251	53.2468	52.4404	.3099
Renter	–19.1718	24.8275	.4400	47.4319	20.5275	.0209
Interaction, 1997	–20.8930	36.1217	.5630	–15.0471	28.5130	.5977
Region of residence:						
Northeast	13.2480	26.4119	.6160	–14.3250	25.5111	.5744
Interaction, 1997	12.7164	37.3989	.7338	82.3344	34.5271	.0171
Midwest	4.7143	25.9368	.8558	7.3365	24.3673	.7634
Interaction, 1997	17.9490	35.7657	.6158	–22.1002	32.0543	.4905
West	1.4211	28.0278	.9596	40.5101	28.6060	.1567
Interaction, 1997	–10.4979	39.6253	.7911	–3.6511	36.2857	.9199
Degree of urbanization:						
Rural	–41.2109	27.8115	.1384	–21.4374	26.7158	.4223
Interaction, 1997	–10.6170	40.7337	.7944	36.4755	37.5127	.3309
Normal scale parameter	441.0108	5.0795	–	335.8598	4.6817	–

NOTE: In this form of regression analysis, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical significance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level. Dash = data not applicable.

Table 9. Regression results, transportation model

Variable	65-to-74 age group			75-and-older age group		
	Parameter estimate	Standard error	Pr > chi-square	Parameter estimate	Standard error	Pr > chi-square
Intercept	–1,282.6087	152.2224	0.0001	–1,117.5075	146.0113	0.0001
Interaction, 1997	81.9515	216.6190	.7052	–283.9626	189.7641	.1346
Total expenditures	0.4383	.0100	.0001	.1013	.0101	.0001
Interaction, 1997	-0.0895	.0130	.0001	.1159	.0109	.0001
Family composition:						
Single man	13.4755	190.4656	.9436	11.2948	182.0738	.9505
Interaction, 1997	–87.4840	259.9384	.7365	278.3308	231.1425	.2285
Husband and wife only	–428.4149	129.6026	.0009	–99.8312	134.0037	.4563
Interaction, 1997	195.2106	179.4105	.2766	219.3074	175.6071	.2117
Other family	–97.2483	192.6126	.6136	–124.6617	200.4178	.5339
Interaction, 1997	–260.4390	277.7466	.3484	247.6954	260.9731	.3426
At least three members	–607.8549	217.6716	.0052	364.5536	289.7762	.2084
Interaction, 1997	897.9912	306.0321	.0033	–567.7013	378.6689	.1338
Education of the reference person:						
High school graduate	–306.4993	112.6678	.0065	17.9175	139.6478	.8979
Interaction, 1997	435.4585	162.6865	.0074	143.4543	174.5400	.4111
Attended college	–896.9442	126.8465	.0001	119.0095	133.3479	.3721
Interaction, 1997	504.7721	175.1627	.0040	–275.1857	172.1986	.1100
Ethnic origin of the reference person:						
Hispanic	198.8331	270.3460	.4620	–261.4778	391.6536	.5044
Interaction, 1997	212.3360	342.1825	.5349	57.4418	471.1235	.9030
Black	–133.1006	213.0494	.5321	–202.6169	228.4373	.3751
Interaction, 1997	471.5515	268.3086	.0788	340.3642	306.8260	.2673
Number of earners:						
One earner	–218.3645	113.2240	.0538	118.0555	163.3065	.4697
Interaction, 1997	54.3979	158.1419	.7309	–501.1135	211.7987	.0180
Two earners	–26.1406	178.7965	.8838	–1,084.3397	398.8703	.0066
Interaction, 1997	–207.0008	244.8192	.3978	1,120.4351	489.9219	.0222
Three or more earners	300.9398	316.6610	.3419	1,661.9822	613.4620	.0067
Interaction, 1997	–1,583.0886	468.8543	.0007	–811.3906	913.9191	.3746
Housing tenure:						
Own home, no mortgage	–168.9665	127.9080	.1865	129.1995	244.0939	.5966
Interaction, 1997	–30.9189	176.6610	.8611	–325.3182	288.9685	.2603
Renter	–55.2726	124.6477	.6575	63.9215	122.6355	.6022
Interaction, 1997	–54.5289	180.7669	.7629	–88.7453	165.5110	.5918
Region of residence:						
Northeast	–90.8173	129.7525	.4840	–193.0416	143.1302	.1774
Interaction, 1997	–150.3166	183.6971	.4132	–13.2903	192.5711	.9450
Midwest	20.9427	127.1265	.8691	–207.9780	136.9389	.1288
Interaction, 1997	–125.0566	173.9251	.4721	244.1025	176.2924	.1662
West	–64.0350	138.8221	.6446	–128.4680	161.2772	.4257
Interaction, 1997	–347.9159	193.8277	.0727	80.2238	201.8468	.6910
Degree of urbanization:						
Rural	121.9668	139.1696	.3808	–318.3385	149.7773	.0336
Interaction, 1997	95.7775	200.3362	.6326	449.9963	205.8721	.0288
Number of vehicles	256.4988	42.3051	.0001	1,083.8082	74.9669	.0001
Interaction, 1997	13.5857	57.5517	.8134	–477.5247	87.5964	.0001
Normal scale parameter	2,185.7595	23.2308	–	1,859.9874	23.4656	–

NOTE: In this form of regression analysis, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical significance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level. Dash = data not applicable.

Table 10. Regression results, recreation and related expenditures model

Variable	65-to 74-age group			75-and-older age group		
	Parameter estimate	Standard error	Pr > chi-square	Parameter estimate	Standard error	Pr > chi-square
Intercept	–309.1186	64.1165	0.0001	–178.4842	66.4207	0.0072
Interaction, 1997	154.7560	90.0096	.0856	73.2151	86.4337	.3970
Total expenditures	.1054	.0042	.0001	.0586	.0048	.0001
Interaction, 1997	–.0202	.0054	.0002	.0322	.0059	.0001
Family composition:						
Single man	161.8007	80.8154	.0453	–28.1746	86.1891	.7437
Interaction, 1997	–52.1522	110.3649	.6365	60.3039	111.0534	.5871
Husband and wife only	111.4271	53.3429	.0367	129.0293	60.6776	.0335
Interaction, 1997	4.0221	73.4480	.9563	7.9356	79.4907	.9205
Other family	–21.7646	82.0935	.7909	–27.4657	91.7746	.7647
Interaction, 1997	36.2419	117.4906	.7577	244.9133	121.2806	.0434
At least three members	–70.3285	91.9118	.4442	6.6349	138.6312	.9618
Interaction, 1997	95.2692	130.0852	.4639	–204.2181	182.5316	.2632
Education of the reference person:						
High school graduate	106.8374	47.7690	.0253	123.0132	65.6114	.0608
Interaction, 1997	36.0755	69.0138	.6012	–98.7555	82.5428	.2315
Attended college	267.7578	53.9204	.0001	205.7596	62.5842	.0010
Interaction, 1997	–22.6743	74.4812	.7608	–202.1044	81.3903	.0130
Ethnic origin of the reference person:						
Hispanic	–116.2976	115.1589	.3125	–257.0763	175.1169	.1421
Interaction, 1997	–63.0959	145.7068	.6650	133.6666	212.9558	.5302
Black	–150.1014	90.9292	.0988	–355.1262	114.9102	.0020
Interaction, 1997	–46.7505	114.1945	.6823	207.0746	149.3673	.1656
Number of earners:						
One earner	110.1382	48.2743	.0225	83.1907	77.6281	.2839
Interaction, 1997	–89.7239	67.4906	.1837	–98.6128	101.7122	.3323
Two earners	43.4761	76.5726	.5702	335.5846	190.2004	.0777
Interaction, 1997	–120.2709	104.5752	.2501	–231.8322	236.5666	.3271
Three or more earners	54.4818	135.5226	.6877	214.3508	293.5319	.4652
Interaction, 1997	–6.3494	198.7433	.9745	–370.9833	437.5975	.3966
Housing tenure:						
Own home, no mortgage	–156.8092	54.5108	.0040	–25.8074	119.4710	.8290
Interaction, 1997	89.1009	75.2836	.2366	–68.2402	140.6560	.6276
Renter	–89.3537	52.2947	.0875	–134.0622	55.1071	.0150
Interaction, 1997	–93.1471	75.2479	.2158	23.1008	75.5141	.7597
Region of residence:						
Northeast	96.5084	55.3989	.0815	130.0649	67.4106	.0537
Interaction, 1997	–71.7679	77.9011	.3569	–131.7696	90.8023	.1467
Midwest	84.2802	54.4455	.1216	60.8805	64.9392	.3485
Interaction, 1997	11.3258	74.3639	.8789	–80.1066	84.0724	.3407
West	117.8678	58.7516	.0448	111.2569	76.5861	.1463
Interaction, 1997	3.6081	82.3416	.9650	–167.0395	96.0528	.0820
Degree of urbanization:						
Rural	–190.1546	58.9572	.0013	–136.2073	71.1919	.0557
Interaction, 1997	82.8174	84.8887	.3293	–.9621	98.3209	.9922
Normal scale parameter	935.0373	9.9151	–	914.3836	11.3657	–

NOTE: In this form of regression analysis, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical significance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level. Dash = data not applicable.

Table 11. Regression results, health care model

Variable	65-to-74 age group			75-and-older age group		
	Parameter estimate	Standard error	Pr > chi-square	Parameter estimate	Standard error	Pr > chi-square
Intercept	223.9060	56.4559	0.0001	253.0077	64.7001	0.0001
Interaction, 1997	6.9065	79.4774	.9308	167.9463	84.8354	.0477
Total expenditures	.0391	.0037	.0001	.0728	.0048	.0001
Interaction, 1997	.0157	.0048	.0012	–.0461	.0059	.0001
Family composition:						
Single man	5.2462	71.0663	.9412	27.8410	82.8175	.7367
Interaction, 1997	253.3079	97.1257	.0091	–12.0099	107.9800	.9114
Husband and wife only	250.9314	47.1470	.0001	202.8538	59.6988	.0007
Interaction, 1997	–36.0469	65.0912	.5797	186.7134	78.6214	.0176
Other family	38.1252	72.3052	.5980	274.0149	89.5568	.0022
Interaction, 1997	62.1256	103.8416	.5497	–158.2754	119.3435	.1848
At least three members	210.7535	81.2887	.0095	–275.1400	137.3050	.0451
Interaction, 1997	–142.2198	115.3714	.2177	569.6527	180.7353	.0016
Education of the reference person:						
High school graduate	68.1504	42.4728	.1086	–16.0053	65.1708	.8060
Interaction, 1997	–26.1641	61.2895	.6695	66.2002	81.8609	.4187
Attended college	–3.4328	48.1668	.9432	–87.8219	62.2246	.1581
Interaction, 1997	15.8264	66.4007	.8116	179.1178	80.9991	.0270
Ethnic origin of the reference person:						
Hispanic	–200.3379	101.9027	.0493	–301.0993	166.3975	.0704
Interaction, 1997	114.6322	128.8284	.3736	207.8834	204.1893	.3086
Black	–179.8736	77.6518	.0205	–162.7816	102.7526	.1131
Interaction, 1997	16.2115	98.4504	.8692	–58.5201	138.4871	.6726
Number of earners:						
One earner	–59.4657	42.8323	.1650	–10.6866	76.9638	.8896
Interaction, 1997	42.4797	60.0172	.4791	–104.4342	101.2229	.3022
Two earners	–212.4772	68.4218	.0019	174.4789	190.2329	.3590
Interaction, 1997	134.7943	93.3865	.1489	–398.1259	236.7401	.0926
Three or more earners	–385.3804	121.0232	.0015	–115.1714	294.9261	.6962
Interaction, 1997	215.4131	177.6961	.2254	–279.6434	443.0965	.5280
Housing tenure:						
Own home, no mortgage	–60.6884	48.5389	.2112	–106.0491	117.4977	.3668
Interaction, 1997	–72.3782	67.1084	.2808	86.9876	138.8534	.5310
Renter	–82.8292	45.9818	.0716	–82.8038	53.5538	.1221
Interaction, 1997	–52.6363	66.3153	.4274	–43.9237	73.8472	.5520
Region of residence:						
Northeast	.2106	49.0971	.9966	–149.5733	66.3453	.0242
Interaction, 1997	–37.4756	69.1071	.5876	143.5455	89.6950	.1095
Midwest	.0354	48.0572	.9994	38.2762	63.4343	.5462
Interaction, 1997	–16.0351	65.8620	.8076	–20.1698	82.6365	.8072
West	–29.7791	52.3204	.5692	–83.2579	75.5497	.2704
Interaction, 1997	–23.0631	73.2812	.7530	–25.9616	95.0771	.7848
Degree of urbanization:						
Rural	55.8260	51.3555	.2770	–37.4692	68.7666	.5858
Interaction, 1997	–16.0838	74.5633	.8292	84.3778	95.8634	.3788
Received reimbursement for health care	289.1046	128.0072	.0239	–229.1799	186.7067	.2196
Interaction, 1997	302.8359	204.7514	.1391	65.8207	275.7782	.8114
Normal scale parameter	836.2532	8.7168	–	920.0360	10.8666	–

NOTE: In this form of regression analysis, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical significance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level. Dash = data not applicable.

Health care. As noted earlier, the allocation of the health care budget has changed for both age groups. The literature shows—and results here confirm—that both age groups are spending more on insurance and less on services and other health care items. This apportionment is not surprising, because, unlike some expenditures, health care is designed to contain goods that may be substitutes. That is, the purpose of purchasing health insurance is to minimize expected expenditures for other health care items. Therefore, at least in the regression analysis, it may be more appropriate to examine health care expenditures on the whole, rather than to look at individual components, to see what kinds of changes may have occurred overall.

As with many other expenditures examined, only a few characteristics of members of the two age groups have any statistically significant explanatory effect. (See table 11.) For 65- to 74-year-olds, families consisting of a husband and wife only and families that have multiple members spend more on health care in general. Families whose reference person is black and those with multiple earners spend less on health care than does the control group. As expected, families with reimbursements also pay less for total health care. The only statistically significant coefficient for a 1997 variable is associated with single men, who spent more for health care that year than they did in 1984. For the 75-and-older group, there are more significant coefficients, including those indicating change over time. Families consisting of a husband and wife only are predicted to spend more in 1984 than the control group, and in 1997 the difference in expenditures increased. Families with multiple members are predicted to spend less in 1984 than the control group, but the situation was reversed in 1997. Although families whose reference person attended college were not significantly different from the control group in 1984, their coefficient for 1997 is positive and statistically significant. Other coefficients, including coefficients for other families (positive), and region (Northeast is negative), are significant for 1984 and do not appear to change for 1997.

At the same time, though, the MPCs and elasticities changed over time for each group. (See table 3.) For the younger group, the MPC increased from 0.028 in 1984 to 0.042 in 1997. However, it decreased from 0.053 to 0.020 for the older group. Similarly, income elasticity increased for the younger group, from 0.275 to 0.386, and decreased for the older group, from 0.300 to 0.139.

THE DEMOGRAPHICS OF THE U.S. POPULATION are changing in many ways. One important change is the increasing average age of the population. Families whose reference person is at least 65 years old are accounting for a larger share of the population. This trend is expected to continue, given the size of the baby-boom generation, which will be reaching that age soon. Concomitantly with these changes, expenditures for different items are expected to shift in the near future. It is important to analyze these trends, then, to anticipate what may lie ahead.

The data used in this article show that older consumers account for an increasing share of total expenditures. This is to be expected, given that older persons are increasing as a percentage of the population. Trends in several expenditure items reveal an interesting pattern: although older consumers spend different amounts than younger consumers, the trends for the groups are generally similar. An examination of aggregate expenditure shares also reveals changes in spending patterns for older consumers.

But these changes may reflect only the change in the proportion of the population made up of older consumers, or they may reflect underlying changes in the demographic composition of the older population. To test whether changes are due to either of these factors or to changing tastes and preferences for the older group, regression analysis was performed. Depending on the percentage of the sample reporting given expenditures, ordinary least squares or Tobit regressions are generally used, although one probit regression is also included. The regression results are remarkably similar, in that few of the independent variables have many statistically significant coefficients, especially those that test for changes over time. The paucity of statistically significant coefficients for the characteristics suggests that older consumers are homogeneous, at least within each age group; the paucity of statistically significant coefficients that test for changes in relationships when 1984 and 1997 are compared suggests that underlying tastes and preferences for the different members of the age groups also have not changed substantially.

These findings must be interpreted carefully. Although it appears that differences in spending patterns are due more to changes in numbers of older consumers rather than changes in tastes or preferences of the two groups, it must be stressed that the consumers represented in the sample are not members of the baby-boom generation. It may well be that the baby-boomers will have different tastes and preferences when they are older consumers than those who currently are in the category. To understand how this could be, one need only consider that the youngest members of the older group in the sample under study were born between 1919 and 1932. Even the youngest of these consumers presumably has some memory of the Great Depression and certainly of World War II. Those who were born in 1945 or later have no such memories and undoubtedly were shaped in different ways by subsequent events. Accordingly, it will be important to continue to watch expenditure patterns in this group to see if there are discernible changes in patterns in the future. □

Notes

[1] Beth Harrison, "Spending patterns of older persons revealed in expenditure survey," *Monthly Labor Review*, October 1986, pp. 15–17.

[2] The basic unit of comparison in the Consumer Expenditure Surveys, a consumer unit, is defined as (1) members of a household related by blood, marriage, adoption, or some other legal arrangement; (2) a single person living alone or sharing a household with others, but who is financially independent; or (3) two or more persons living together who share responsibility for at least two out of three major types of expenses—food, housing, and other expenses. Students living in university-sponsored housing are also included in the sample as separate consumer units.

For convenience, "consumer unit" is referred to as a "family" throughout this article, even though a consumer unit can be a single person.

[3] The reference person is the first person mentioned by the respondent when asked to "Start with the name of the person or one of the persons who owns or rents this home."

[4] Thomas Moehrle, "Expenditure patterns of the elderly: workers and nonworkers," *Monthly Labor Review*, May 1990, pp. 34–41.

[5] Pamela B. Hitschler, "Spending by older consumers: 1980 and 1990 compared." *Monthly Labor Review*, May 1993, pp. 3–13.

[6] Mohamed Abdel-Ghany and Deanna L. Sharpe, "Consumption Patterns Among the Young-Old and Old-Old," *Journal of Consumer Affairs*, summer 1997 pp. 90–112.

[7] Rose M. Rubin and Michael L. Nieswiadomy, *Expenditures of Older Americans* (Westport, CT, Praeger Press, 1997).

[8] See Rubin and Nieswiadomy, *Expenditures of Older Americans*, chapter 4.

[9] For example, patterns in health care expenditures for 1980 and 1990 are compared in chapter 6 of Rubin and Nieswiadomy.

[10] A report describing the 1994–95 survey results says that the "Interview survey collects detailed data on an estimated 60 to 70 percent of total household expenditures. Global estimates, that is, expense patterns for a 3-month period, are obtained for food and other selected items, accounting for an additional 20 to 25 percent of total expenditures." (See *Consumer Expenditure Survey, 1994–95* Bulletin 2492 (Bureau of Labor Statistics, December 1997), p. 256.

[11] At least, this is true since 1988. Prior to that time, respondents were asked about their average *monthly* expenditures for groceries.

[12] Details on the integration methodology are found in *Consumer Expenditure Survey, 1994–95* Bulletin 2492 (Bureau of Labor Statistics, December 1997), pp. 256-57.

[13] To be precise, of every $6.85 consumers spend, $1 comes from a family in which the reference person is at least 65 years old.

[14] Shelter consists of payments for owned and rented primary dwellings, including utilities. Utilities are counted because some consumers have these payments included with shelter payments and cannot separate them out.

[15] Gregory Acs and John Sabelhaus, "Trends in out-of-pocket spending on health care, 1980-92," *Monthly Labor Review*, December 1995, pp. 35–45; quote from p. 37.

[16] The Consumer Expenditure Survey collects information only on out-of-pocket health care expenditures. Although these include health insurance premium payments, any payments made by the insurance company directly to the health care provider are not counted in these figures.

[17] Using total expenditures as a proxy for permanent income is done for theoretical and empirical reasons. From theory, Milton Friedman's "permanent income hypothesis" suggests that consumers make expenditure decisions based not only on their current income, but also on expectations of future income. Empirically, the alternative is to use reported income as a variable. However, respondents do not always report information on income, and even those who do may not provide a full accounting of all income from all sources. Furthermore, expenditure decisions may be based in part on changes in assets and liabilities, which are collected only on a limited basis in the Interview survey.

In addition, other authors mentioned in this study use permanent income in some form in their analyses. Abdel-Ghany and Sharpe use total expenditures directly, as is done herein. Rubin and Nieswiadomy use a regression to estimate permanent income. Specifically, they regress total expenditures on characteristics such as current income and financial assets. They use the natural logarithm of the predicted value for total expenditures as a proxy for permanent income. Because Rubin and Nieswiadomy's method would reduce the sample for study to those families for which income and asset data are available, the approach used by Abdel-Ghany and Sharpe is preferred in this case.

For more information on permanent income and the "permanent income hypothesis," see Friedman, *A Theory of the Consumption Function* (Princeton, NJ, Princeton University Press, 1957).

[18] See, for example, Geoffrey D. Paulin, "A Comparison of Consumer Expenditures by Housing Tenure," *Journal of Consumer Affairs*, summer 1995, pp. 164–98.

[19] See table 2 for the percentage of the sample that reports specific expenditures.

[20] For details, see John F. McDonald and Robert A. Moffitt, "The Uses of Tobit Analysis," *Review of Economics and Statistics*, vol. 62, no. 2, 318–21.

[21] It is possible, then, that some expenditures reported in 1984 actually occurred in 1983, and some reported in 1997 actually occurred in 1996. For example, a person interviewed in January would report expenditures for the previous October, November, and December; a person interviewed in February would report expenditures for November, December, and January; and so forth.

[22] Probabilities are derived from results presented in table 4. In probit results, a positive coefficient indicates a higher probability of an event, given the associated characteristic, and a negative coefficient indicates a lower probability of an event occurring. Similarly, the larger the magnitude of the coefficient, the more (or less) likely is the event (depending on the sign of the coefficient). Unfortunately, beyond this, probit parameter estimates are not easily interpreted. They must be incorporated into a conventional regression equation (that is, a predicted value is obtained on the basis of parameter estimates and characteristics of the family under study), the results of which provide a value for the "cumulative density function," or CDF. It is then usually necessary to consult a standard table of values for the CDF to find the probability of an event occurring that is associated with the function's predicted value.

For more details on the probit model, including an applied example, see William H. Greene, *Econometric Analysis*, 2nd ed. (New York, NY, Macmillan Publishing Co., 1993), chapter 21, esp. pp.635–41.

[23] At least, not at the 95-percent confidence level; it *is* significant at the 90-percent level, however.

[24] In each of these cases, the parameter estimate for 1984 is statistically significant, with 1997 showing no significant difference.